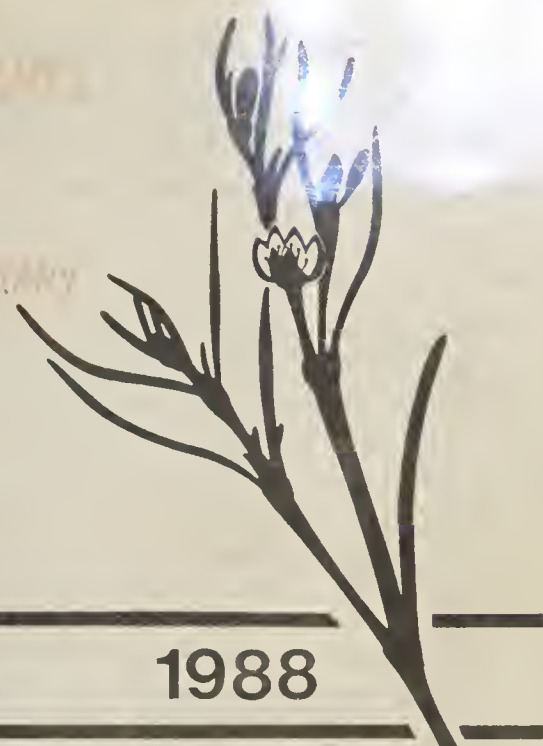


BOTANY NEWSLETTER



Department of Plant Biology, University of Illinois at Urbana-Champaign

1988

Guggenheim Fellow Award to Colin Wraight

Colin Wraight, Professor of Biophysics and Plant Biology, has been named a Fellow of the John Simon Guggenheim Foundation for 1988. The award will permit Colin to pursue his research on protein engineering of the photosynthetic reaction center of *Rhodospseudomonas sphaeroides* while on sabbatical leave. His research on the practical aspects of protein engineering will be carried out at Imperial College, London, in the laboratories of Dr. Neil Hunter (molecular genetics of photosynthetic bacteria) and Professor James Barber (biophysics of photosynthesis). He will also work with Dr. Ann-Lise Etienne at the CNRS Photosynthesis Laboratory at Gif-sur-Yvette, near Paris. Colin also has received an appointment at the University of Illinois in the Center for Advanced Study.

Colin is a native Londoner and received his doctorate from The University of Bristol under the supervision of Tony Crofts who is also now on our campus. After postdoctoral work at Leiden and Ithaca, Colin spent two

years at the University of California at Santa Barbara before joining our faculty. For the past 12 years at the University Colin has sustained an outstanding research program on the biophysics of the reaction centers of photosynthetic bacteria, moving into the realm of molecular biology with site-directed mutagenesis of the reaction center protein.

Having appointments in two departments is a challenge that Colin has both met and exceeded with his teaching, service and leadership. Upon completing 2.5 years as Associate Head of Plant Biology, Colin stepped in as Acting Coordinator of the McKnight Interdisciplinary Photosynthesis Research Program during Don Ort's sabbatical leave last year. Our best wishes to Colin for his sabbatical plans and congratulations on well merited awards!

The John Simon Guggenheim Memorial Foundation has awarded over \$129 million in Fellowships in its 64 year history. The new Guggenheim Fellows were appointed on the basis of unusually distinguished achievement



Professor Colin Wraight simulating the smile that came to his face when he read the letter from the Guggenheim Memorial Foundation.

in the past and exceptional promise for future accomplishment. Those selected in the arts include writers, composers, choreographers, painters, sculptors, photographers, and film and video makers. Scholarship and science are represented by the major disciplines of the physical and biological sciences, the social sciences, and the

humanities. Of the 262 artists, scholars and scientists chosen for 1988, two were from the University of Illinois: Robert B. Gennis, professor of Biochemistry and Chemistry, was the other recipient.

Congratulations across the miles to Fakhri A. Bazzaz who is also a Guggenheim Fellow for 1988!

New Plant Sciences Greenhouse Opens



Carol Augspurger and Stephanie Manion setting up experiments.

The Plant Sciences Greenhouse was accepted by the University on January 15, 1988. The Department of Plant Biology will occupy 31 of the 67 greenhouse rooms in the new complex. Movement into the new greenhouse has been progressing slowly and is dependent on the weather and the scheduling of greenhouse experiments. The Department will be allowed to occupy its old greenhouse facilities until the end of the summer. The extended time for moving out of the old greenhouses will allow a gradual and organized move with the least amount of disruption to ongoing research projects.

Research Facilities

Of the 31 rooms assigned to the Department of Plant Biology, 25 will be available to meet research and short-term teaching requirements. Thirteen of these houses are just over 200 sq. ft., an ideal size for a variety of greenhouse projects, particularly those requiring isolation from other plants. Ten other rooms are approximately 400 square feet. These houses provide conditions suitable for ecological experiments and projects with large quantities or sizes of plant materials. Both the 200 and 400 sq. ft. houses are equipped with floating-aisle benches which maximize the amount of available bench space within each. The two remaining houses are five foot deep pits filled with a soil mix.

These ground-bed houses will be available for long-term studies and may also be used for root growth studies. The old Botany Annex Greenhouse was the site of the Department's research projects up until now. Since the Annex has only eleven rooms which were not well separated or environmentally controlled, the new greenhouse offers researchers a dramatic improvement in both the quantity and quality of greenhouse space available.

Teaching and Special Facilities

One 200 sq. ft. house will be set up as a propagation house with mist lines and fixed benches. The four remaining 400 sq. ft. houses, along with the 2200 sq. ft. conservatory, will hold the Department's plant collections. The four collections houses will be equipped with tiered display benches and will be set up for ferns/orchids/epiphytes, aquatics, Mediterranean vegetation and desert plants. The conservatory will hold the bulk of the tropical plant collection.

Work on the conservatory's landscape design is in the final stages of planning. The design includes fountains, pools for aquatic plants, a wet wall, seating areas for students and visitors, and tiered planting beds. The landscape design is being underwritten by the campus Art-in-Architecture Program. A percentage of the construction funds for all campus buildings is set

aside for art work in, on or outside buildings on campus. For the new greenhouse building, these funds are being applied to the conservatory's landscape design and construction. Dan Nardi, an artist from Bloomington, Illinois, was chosen for this Art-in-Architecture project. Dan has done a number of works of environmental art and is also currently an art professor at Illinois State University. Work in the conservatory is scheduled to begin this spring. The move of most of the plant collections will be delayed until the design has been put in place. The layout of the new conservatory and collections houses will provide both a valuable resource for many classes in Plant Biology and other departments as well as a new attraction for visitors to the University of Illinois campus.

Besides the areas specific to Plant Biology, the Plant Sciences Laboratory and Greenhouses include greenhouse space for Horticulture, Plant Pathology, and Forestry. Common support areas for the greenhouse include rooms for soil handling, storage, growth chambers, walk-in freezer and cold storage, pesticide storage, lockers and showers, and greenhouse environmental control. The Department of Plant Biology also has a 1,000 sq. ft. Ecology/Physiology Laboratory located in the building to support research projects in the greenhouse.

To Alumni, Former Colleagues and Friends of Plant Biology:

GOOD NEWS AND BAD NEWS

This special celebration issue is perhaps the most upbeat of the recent NEWSLETTERS because plant biologists have so much going for them, especially at the University of Illinois. There probably never was a better time to be a plant biologist—a time enhanced by the research capabilities we have and by the training facilities and courses we have developed. It is not that our Department of Plant Biology has "arrived" or "achieved" our individual and collective goals, but that we are full-time "doing" in a fast-changing science. With technological innovations and applications that can aid in research and teaching, we obviously have had to invest much effort to acquire the skills and techniques as well as the expensive equipment and facilities for research and graduate training into the 1990s.

Given the breadth and depth of our academic programs, our departmental growth in plant molecular biology is but the "tip of the iceberg." While various programs need time for growth and sustained productivity, all of them have needed expensive equipment and facilities from the outset. We celebrate in this issue the arrival of some of the needed wherewithal, and we celebrate the close spirit of teamwork in the planning, recruiting, and sustained efforts of the past decade in achieving this 1987-88 milestone!

This has been a roller coaster year of highs and lows—bad news and good! It has been one of the worst for the University in a *long* time as noted below in a fair-minded statement by the LAS Dean, William Prokasy. The repercussions of such fiscal constraints may change from this year's subtle reduction in University-wide achievements to a decline in *esprit de corps* with its unpredictable consequences. The whole situation seems to have hit the University just as some units such as our own were finally

"rounding the corner" after years of delay and "making do." Well, bad news is never timely and perhaps another year will see the tide of public perception of the University insist on more realistic budget policy. Fortunately, bad news is usually followed by good—sooner or later.

This was certainly illustrated in our Department when Richard Crang's laboratory was ravaged by fire last summer. A combination of circumstances, ranging from prompt and effective action by the University Fire Department, to minimal flammable chemicals in the lab, prevented potentially catastrophic losses in Morrill Hall. The fire was contained to the first floor main lab, although losses were severe within the whole research unit. The response of the University in reconstruction was prompt and the Crang lab was fully renovated and operational by October. I need not get into puns about a "lab warning," but we are all pleased that no one was injured and that the students and Richard have picked up their projects with good cheer—despite the irreplaceable losses of research data and materials. This has been a major setback for each of them.

Progressively through this past year we have celebrated the arrival of new students, completion of new facilities, installation of new equipment and even the acquisition of a good used van for the greenhouse operation. We look forward to the completion of the conservatory—both a work of art and a working greenhouse for teaching and public use. As these projects have reached fruition, I am mindful that each is simply a means to our projected goals of training, research and service to the University and the community.

Even more important to me have been the colleagues and students who have developed the traditions and sustained excellence that have fostered an academic environment justifying these acquisitions of facilities, yet "making do" all the while. In a very real way it has been our alumni and our senior faculty

(past and present) who have helped to pave the way for really brighter futures for all the young plant biologists who join our Department. To a large extent our immediate future is already in the hands of the young faculty, ranging from two years from lab start-up to two years beyond their promotions to professor. This is an extremely capable and synergistic group of colleagues. Those of us in the 25+ year group at Urbana take enormous pride in their accomplishments and feel that our confidence in their professional abilities are well founded.

This year is special for me, too, both personally and professionally. It ends my four years as head of the Department and I do have the satisfaction of seeing some of our collective efforts realized and of personally sharing in the professional achievements of colleagues and their students. Perhaps no better tribute can be made to my colleagues and our students than my comments to Dean Prokasy last fall during an administrative meeting at Allerton Park. The Dean has just received my letter of resignation and he commented, "I see that you have thrown in the towel!" Somewhat surprised, because I had agreed to serve 3-4 years, I said "I have no regrets at all. It is an excellent group of faculty, staff, and students to work with and I hope that all the faculty will be here four years from now!" I think that our Department has grown quite significantly during these past four years, primarily by their own boot straps and efforts, and the faculty have responded extremely positively to my administrative "style" and their own sources of leadership. While I have never expressed my philosophy of administration, I hope that it has been amply evident in the help provided by the administrative and service staff of the Department. At the University, the ultimate delivery unit of teaching, research and service is the department. The faculty are responsible for the excellence and timeliness of that delivery, and they need the wherewithal and requisite environmental incentives to achieve them!

These past four years have been invigorating for me in many ways, particularly in sustained personal friendships with colleagues who quite clearly went the "second mile" in efforts toward our goals. I have been fortunate to have had two outstanding Associate Heads, Colin Wraight and Carol Shearer, superb and deliberate Advisory Committees each year, effective committee chairs and a creative, fail-safe staff, exemplified by Sheila Hunt, Joyce Roberts and Martha Plummer. Much of the behind-the-scenes planning and implementation in Departmental endeavors has gone unrecognized for years and I would like to especially recognize the outstanding contributions of Zane Carothers, John Cheeseman, Richard Crang, Ed Dole, James Kramer, John Laughnan, Don Ort, David Seigler, Mary Schuler, Colin Wraight, and especially the Assistant SOLS Director, Paul Mortensen. I would also like to express my appreciation for the close cooperation and friendships of department heads in Agronomy, Entomology, Horticulture, Microbiology and Physiology-Biophysics. These and other collective ties of our Department with academic missions across the campus have developed in the spirit of mutual interests and cooperation at a very effective level and I trust that they will continue to prosper.

In the spirit of celebration, I also look forward to having more time for students in my classes and research lab, and, of course, for research. As in the broad spectrum of research capabilities of our Department, from algae to angiosperms and the molecular to the ecosystem, we, each of us, thrive on what we enjoy doing most—plant biology!

Similarly, I look forward to our quest for excellence in Plant Biology with David Seigler as the new Department Head and Zane Carothers as the new Associate Head.

Tom L. Phillips
Professor and Head (2 weeks to go!)

From the Dean's Desk

Quoted from the LAS Newsletter, Fall 1987, with permission of Dean William F. Prokasy

Students and faculty returned to campus this fall to face the consequences of the University's worst budget in at least fifteen years. The 1987-88 budget is 4% less than the 1986-87 budget, and no funds existed for faculty or staff raises. In addition, matching funds pledged in the past by the Governor for federally-supported scientific and technological developments were not awarded, so they were met from the already reduced budget. There were also mandated cost increases for which no provision was made. The net effect is a budget loss well in excess of 4% coupled with no new raise monies for staff or faculty.

It may be argued that the University can absorb a budget reduction, that there is always "fat in the system" which can be removed without loss. There is some, though misleading, truth to part of that argument. Of course the University will survive a budget cut; others have absorbed reductions and survived, why not the University of Illinois? However, the damage, and it

would be well to understand just what that damage will be.

The most obvious adverse consequences are three-fold. First, student tuition will increase, with increases of as much as 20% being considered. This means that our students will have among the higher public university tuitions nationally.

Second, average class size will increase. Excellent instruction can and does occur in large classes, but the pedagogical virtues of small classes cannot be ignored. In particular, close student-faculty interaction is possible. The budget reduction means fewer small classes.

Finally, there is the unavoidable loss of staff and faculty morale. Excellent clerical and other support staff are difficult to retain given our relatively low wage scale. Comparative data also show that our teaching assistants have salaries 10% or more behind those of their counterparts at competitive institutions. Similarly, our faculty salaries average from five to fifteen percent (varying with discipline) behind peer salaries elsewhere. In addition, staff and faculty fringe benefits are among the poorest in comprehensive universi-

ties and place our average total compensation at the bottom of the Big 10. Surely this is not befitting one of the several finest state universities in the nation. Unfortunately, the absence of raises will place us even further behind.

Level of pay isn't the only determiner of why staff and faculty choose to be at the University of Illinois. Quality of students and faculty colleagues is important, as is the availability of resources to pursue scholarship in and out of the classroom. Moreover, the many significant initiatives of recent years help assure that our campus is an attractive place for continuing as well as prospective faculty. Nonetheless, erosion of pay levels and increased class sizes reduce the U. of I.'s attractiveness for outstanding faculty who are able to move from one distinguished institution to another.

We will do our best to retain our faculty and staff, and this we can do in part by assuring that our budget reduction minimizes the disruption of support for faculty and student scholarship. For example, every effort is being made to increase the library's support base. In addition, there are campus-wide efforts to increase the availability and quality of

computer-assisted instruction. Further, care in implementing increased class sizes can limit damage for both student and instructor.

We have the optimistic view that, whether in a special legislative session or in subsequent sessions, there will be budget restoration. The impetus of recent developments will carry us through this academic year, but failure to restore the budget in some form will have lasting damage.

In summary, the 4% budget reduction does hurt: there is no "fat" to remove from the system. There will be increased student tuition, increased class sizes, and a probable loss of some excellent faculty and staff. Whether the damage will be short or long term will be determined by the extent to which the budget is restored. Recent programmatic developments provide a basis for an optimistic outlook despite a poor budget year, but they do not determine the future budget. That will be determined by the Governor, the legislature, and the much-needed support of the citizens of the State of Illinois.

Department of Plant Biology 1988-89 Faculty and Staff

David S. Seigler, Head, Professor of Plant Biology,
Entomology and Horticulture
Zane B. Carothers, Associate Head, Professor of Plant
Biology
Main Office (Morrill Hall):
Shirley Langenhelm, Staff Secretary
Martha Plummer and Beth Myler, Clerk-Typist III
Satellite Office (Morrill Hall):
Sheila Hunt, Secretary
Davenport Hall:
Conna Peters, GS-4/USDA
Herbarium (Natural History Building):
Daniel L. Nickrent, Director and Assistant Professor
Almut G. Jones, Curator and Assistant Professor
Laurel McKee, Assistant to Curator

Greenhouses:
James D. Kramer, Coordinator and Manager—
Plant Science Greenhouses
Rex Mahannah, Agriculture Gardener

Professors:
Dennis E. Buetow, Dept. of Physiology and Biophysics
Richard E. Crang, Director, Ctr. for Electron Microscopy
David B. Dickinson, Head, Dept. of Horticulture
Govindjee, & Physiology and Biophysics
Claus H. Grunwald, & Illinois State Natural History Survey
Larry R. Hoffman
John R. Laughnan, & Agronomy
Donald R. Ort
Tom L. Phillips, & Geology
Robert W. Tuveson, & Microbiology
Collin A. Wraight, & Physiology & Biophysics

Professors Emeriti:
Lindsay M. Black, Botany
J.B. Hanson, Plant Physiology
Donald P. Rogers, Botany

Associate Professors:
Carol K. Augspurger
John M. Cheeseman, & Forestry
Malcolm L. Sargent, & Biology
Carol A. Shearer
C. John Whitmarsh

Assistant Professors:
Daniel R. Bush
Evan H. DeLucia, & Forestry
Thomas Jacobs
E.M. Buddy Orozco, & Agronomy
Mary A. Schuler, & Biochemistry
Raymond E. Zielinski

Affiliates:
William L. Ogren, Professor of Agronomy and USDA/ARS
Photosynthesis Group Leader
Lorin I. Nevling, Chief, Illinois State Nat. History Survey
Judith A.D. Parrish
Kenneth R. Robertson, Illinois State Nat. History Survey

Life Sciences Teaching Laboratory Specialists:
R. Edward Dole
Mark A. Buchhelm
Heather J. Young

Research Staff:
Prasanna Athma, Research Assoc. with J.R. Laughnan
Mary F. Blackwell, Research Assoc. with C.J. Whitmarsh
Guy J. Bredenkamp, Research Assoc. with C.J. Whitmarsh
and D.E. Buetow
Lisa J. Ceriglione, Research Specialist with R.E. Crang
and C.A. Shearer
Janet Day, Specialist in Biol. Research with J.R. Laughnan
Tad Day, Research Associate with E.H. DeLucia
Susan Gabay-Laughnan, Res. Sci. with J.R. Laughnan
Jeffrey D. Kent, Research Assoc. with D.R. Ort
Peter Maroti, Research Assoc. with C.A. Wraight
John N. Nishio, Research Assoc. with C.J. Whitmarsh
Kevin M. Oxborough, Research Assoc. with D.R. Ort
Cassie B. Stewart, Research Specialist with M.A. Schuler
Mary Ann Topa, Research Assoc. with J.M. Cheeseman
Robert R. Wise, Research Assoc. with D.R. Ort
Gracia Zabala, Research Assoc. with J.R. Laughnan

New Department Head and Associate Head

From the "bridge" or the "penthouse" of Morrill Hall (actually the sixth floor) come our Departmental administrators for fall 1988 and beyond. Professors David S. Seigler and Zane B. Carothers are next door lab neighbors, and chances are that there will be many quick visits between their labs on Departmental matters over the next few years.



David S. Seigler

David joined the Department in 1970 after postdoctoral work at the Northern Regional Laboratory, U.S.D.A., at Peoria, and in the Botany Department at the University of Texas at Austin. His doctorate was received from the University of Oklahoma in organic chemistry. We label David a phytochemist with particular interests in secondary metabolites, their economic uses, and their roles in biological systems. This hardly conveys his wide ranging interests and expertise in plants and animals—from the diets of howling monkeys in Madagascar to the tannins in "ant plants" (*Acacia*) in Mexico. David travels a great deal in his research as

well as on the seminar, symposium, and workshop circuit. He has many team research projects involving extramural colleagues at Duke University, University of California at Davis, Eastern Illinois University, Venezuela, Madagascar, and Mexico, as well as others on campus in Entomology and Horticulture.

David's service to the Department and his other professional commitments have entailed long hours of behind-the-scenes planning, editing, and advising. He served as Associate Head of the Department from 1980 to 1982.

Our new greenhouses are part of his long-term planning effort and he has chaired our Greenhouse Committee for the past three years. His interests and knowledge of greenhouse facilities have had an important impact for the Department since he first arrived. David is a member of the editorial boards of *Biochemical Systematics and Ecology*, the *Illinois Biological Monographs Committee*, and the *Transactions of the Illinois Academy of Sciences*. He has just completed his three-year term on the Screening Committee for Fulbright Scholar Awards in Life Sciences. He organized and chaired the Gordon Conference on "Plant Herbivore Interactions" in 1986 and was co-organizer of the symposium on "Alkaloids in Plant Systematics" at the Berlin Congress.

What is exceptional about David's expertise with plants in this day and age is that he really knows the plants, from ferns to angiosperms, and can usually identify them from the meager specimens sent from far flung places.



Zane B. Carothers

According to Zane, he is the "longest continuous member" of the Department, having arrived here in 1959 after two years on the faculty of the University of Kentucky. He received his doctorate from the University of Michigan. While most of us are more mindful of his meticulous ultrastructural research with bryophytes and his reputation as a splendid teacher, he also brings more administrative experience to the associate headship than others. Zane has served twice before as our Associate Head (1970-72, 1983-84) and also has the distinction (imagine this on an assistant professor's CV!) of having been an Acting Chair of the Department (June 1962-Feb. 1963).

Zane's eye for detail, ranging from fellowship credentials to electron micrographs, are "part and parcel" of his sustained contributions to the Department's governance, graduate program and the research in his and other labs here and abroad. His anatomical research on embryophytes began with a master's thesis on vegetative propagation in *Drosera filiformis* and continued with his doctoral study of the shrubby Geraniaceae. Soon thereafter the emphasis shifted from vascular plants to bryophytes, more particu-

larly to ultrastructural analyses of spermatogenesis and, later, to comparative morphological studies of blepharoplasts. Blepharoplasts are structurally complex assemblages comprising the developing male gamete's microtubular skeleton, the associated "lamellar strip," and portions of the locomotory apparatus. Much of the earlier pioneering work was done in association with two of Zane's graduate students: Gerald Kreitner and John Moser. His extramural research collaborators include

Roy Brown and Betty Lemmon of the University of Southwestern Louisiana, Jeffrey Duckett of Queen Mary College (University of London), Karen Renzaglia of East Tennessee State University, and Ann Rushing of Auburn University. Most recently he and Ann have completed a major work of "Advances in Bryology" combining a detailed review of comparative blepharoplast morphology and new research on the blepharoplast of a putatively primitive liverwort. Zane says that study, complete with pull-out illustrations of same-scale reconstructions, represents a benchmark in that field of phylogenetic inquiry.

In addition to his work with bryophytes Zane maintains a keen interest in vascular plant anatomy. He teaches our course in that subject—this year grown to 26 students, thus requiring two lab sections—keeps up to date on the relevant anatomical literature, and consults widely on campus concerning various projects incorporating plant structure. What is less well known is his long interest in the sea—above, on, and below the surface—including naval and maritime history as well as contemporary events. In "high" last summer was taking photographs through the periscope of the Pampanito (SS-385), a WW II fleet-type submarine!



Our Special Staff

On those days when you know a lot was accomplished in meetings, moving, manuscripts, materials acquisition or fast finishes of thorny projects, chances are that you were working with one of these special members of the Department or SOLS. Three

features shared by each of these friends are their cheerfulness when you pop into their office, their problem-solving abilities and their willingness to go the "second mile" on helping get the task accomplished in a prompt and efficient way.



Paul F. Mortensen is the Business Manager and Assistant Director of SOLS who helps make things work for everyone in the Life Sciences, from budgets to buildings. Paul has carried out his diverse missions for the School since 1971 and these include the Art Service, Animal Care, Machine and Electronics/Instrument Shops, Word Processing Service and the Business Office among many other planning and problem-solving activities. His aim is to facilitate high quality and timely services for students and faculty, cutting out the red tape, so that we can effectively carry out our missions. This calls for innovative and creative problem solving. Indeed, that has become the hallmark of his role in aiding all of us.

When asked what he liked about his job (knowing the numerous problems I have shared with him), his answer emphasized the opportunity to have close contact with faculty, students and staff and actually see how the plans and services work out for them and translate into research accomplishments and instructional improvements. From numerous planning sessions with Paul,

it is clear that his attitude toward problem-solving is essentially geared to "How can we make it work and work better?" Paul has been a key planner in each of the new facilities coming on line for Plant Biology from the Paleobotanical Research Center to the new Plant Science Greenhouse Complex. He probably has one of the longest work days at the University and is the first to get a call when there are emergencies—from fires to floods!

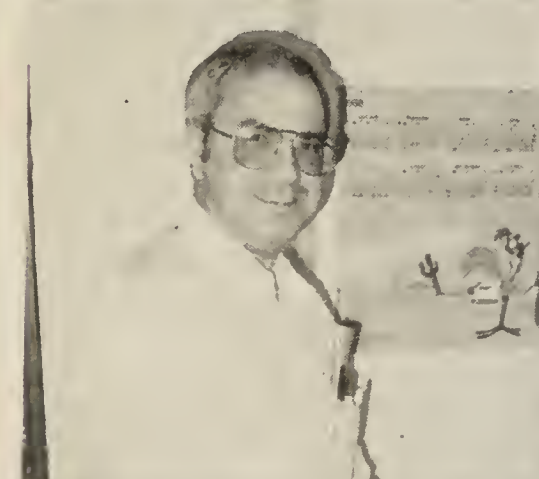
In working with Paul I often wondered where he acquired such diverse knowledge of machinery, accounting, shop operations, etc. While that is a long story and continues each day with new sets of problems, you might say he acquired much expertise here at the University, starting with his undergraduate training and a business degree in marketing. Behind the scenes, Paul worked half-time in Mining and Metallurgy-Engineering (now Materials Science and Engineering) learning first-hand the shop work, storeroom responsibilities, inventory and accounting. In fact, his first position as a business manager was with M & M Engineering in 1969-71 when he returned to campus. When pressed for his source of expertise on machinery and repair, Paul smiles and admits to enjoying delving into the complex working of machinery and electronics—a long-term interest enhanced by his experience as an aircraft mechanic with the military. He has been keeping us "flying" in the same way.

When Paul and his family do get away for some recreation time, it is often boating and sometimes a bit of golf. The sports are as far removed from telephone connections as possible and we can understand why!

faculty arrive or senior staff go looking for, "Where can I find a 'widget'!" It is often behind the scenes that some of us find that Jim not only knows how to run his storeroom but to problem-solve the logistics of moving the proverbial "16 tons of number 9 coal balls" or recycle furniture and shelving faster than the dust can settle on it. Jim has a splendid crew in the Storeroom with Earl Long and two ever-moving, part-time helpers, Scott Mortensen and Jim Taylor.

Jim said he stayed in shape previously by playing lunchtime handball and racquetball at the IMPE but finally gave it up for square dancing, which he very much enjoys. He continues to take courses at Parkland, currently in data processing, with accounting and basic computer science, as always, adding to his skills to expedite the handling of supplies and records.

His wife, Vicki, is also at the University, an Assistant Professor in the division of Family and Consumer Economics, part of what was called 'Home Ec.' She is a square dancer, too!



Jim Fitzsimmons is the SOLS Stores Supervisor and, in addition, he knows where almost everything is or ought to be, from gas cylinders to an extra desk, in 8 buildings that house various life science personnel and equipment. Jim is a native of Urbana, and began work in the Physical Plant Storeroom in June 1966. He subsequently was Storekeeper in the Department of Entomology from 1970 until the opening of the new Storeroom for the School in the mid-70s.

"Check with Jim," is a common phrase in our department when new



Ed Dole is both an alumnus (1975) and teacher in the Department since leaving the U.S. Navy in 1972. He has served as Laboratory Coordinator, Specialist in Botany Education, and now Life Science Teaching Laboratory Specialist in Plant Biology 102—Plants, Environment and Man. His role in coordinating and teaching in both of the introductory courses brings an exceptional level of expertise and continuity in planning, testing and implementing creative learning opportunities

for thousands of students over the years.

Among the numerous major contributions Ed has made to teaching Plant Biology, his adoption of an "objectives" format for the lectures with specific scope and depth in PB102 has proven to significantly enhance student achievement. Ed described the results as dramatic in improved performance and, as adopted for PB100, the student scores in exams have certainly been raised. The construction of lectures around clearly specified objectives provides flexibility for the rotating faculty and utilizes their insights in how to get a particular concept across in the clearest manner. We can really take pride in the accomplishments of Ed and the introductory plant biology course staff. In the first offering of PB102 every teacher in the course was rated excellent by student evaluations.

At the Doles' home outside St. Joseph, the topics on teaching are shared with Ed's wife, Sue, who coordinates and teaches in the gifted program for the Oakwood school district. In their spare time, Ed and Sue are ambitious gardeners on their half acre and share a serious interest in antique collecting.



Sheila L. Hunt Receives First Plant Biology Commendation

Sheila is our transcribing secretary and in charge of the department's Satellite Office on the first floor of Morrill Hall. She has been a vital team player with our unit since 1965 and no amount of labels begins to convey the responsibilities or the quality of work that are associated with her over the years. Sheila has been recommended for numerous superior performance and merit awards as well as twice nominated for the Chancellor's Distinguished Nonacademic Staff Award. We thought it about time that the Department present its own special award for such an outstanding team member and it was presented at the May 11th recognition gathering of the whole Department in 408 NHB with the following citation:

"It is with pride and appreciation for your outstanding contributions to our Department that we present you with the first Departmental Commendation for sustained superior performance above and beyond your secretarial duties. In so many ways you continue

to set the standards for excellence in this Department and at this University. We are aware of the superlative manner in which you have consistently carried out your secretarial duties and assumed responsibilities for the successful finish of each and every project. You have extended beyond your office responsibilities to computerize bibliographies, file correspondence and help many of us in the critical crunch of deadlines.

You have generously and effectively helped create an *esprit de corps* among staff and students that makes our Department and you very special! Your initiatives have significantly aided the beginning of numerous young faculty and sustained the pace of ever increasing productivity of the Department in research and teaching. On behalf of all of us, this Departmental Commendation conveys our esteem for you personally and professionally and our pride in your sustained outstanding accomplishments."



Shirley Langenheim, Staff Secretary, celebrated her 25th(+) year at the University last fall at a special SOLS luncheon honoring staff.



New Member of the Department

Beth L. Myler, Clerk Typist III. Beth joined the main office staff in August 1987 after working in the Office of Planning and Budgets at the University since 1985. She is a member of the Plant Biology 100-102 team, keeping their revised manuals, exams, etc. rolling on schedule and typing for many of the faculty. Beth also opens the office early each morning and brings the word processors on line, making a back-up disk of the previous day's work. Her penchant for a busy day of helping is accurately reflected in our office productivity. Beth has already proved to be a valuable team player in the crunch of deadlines for class materials, manuscripts, and other departmental business.

Beth is a native of Homer, Illinois, where many of us have picnicked or gone sailboating. In addition to her work at the Big U, she attends "night school" at nearby Parkland Community College, taking business courses. She plans eventually to return to Eastern Illinois University to finish her bachelor's and pursue a career as a consumer advocate. Beth said that she had had enough experience as a dissatisfied consumer to realize that there was a terrific future for companies and institutions that learned to handle complaints in a prompt and satisfactory manner. That certainly marks the spirit of Beth's role in our office and makes her special in any task she undertakes. Between work and school (weather permitting) Beth indulges in her favorite sport, golfing—a keen interest shared with her husband, David.

THE PLANT BIOLOGY AND AFFILIATED GRADUATE-STUDENTS ORGANIZATION

Graduate student representatives participate in virtually every phase of Departmental governance, thus helping to keep everyone informed of what is happening—in addition to the administrative experience the grads receive in the process. They have been quite effective in all the standing committees and have played major roles in recruitment, seminars, teaching, and publications.

The officers for the 1987-88 school year are:

Graduate Chairperson—Vincent Ling
Treasurer—Denise Thiede

Departmental Representative on the Advisory Committee—Kaoru Kitajima

Departmental Representative on the Graduate Affairs Committee—Ann Pizanis

Departmental Representative on the Instruction Committee—Jane Molofsky

Seminar Club Committee—Swati Basu and Kaoru Kitajima

The "PBAGS" (Plant Biology and Affiliated Graduate Students) have had a fairly eventful, informative, and prosperous time this school year. With a large incoming group of new grad students, PBAGS have been involved in celebrations, seminars, and some money making.

The new Paleobotanical Research Lab Opening was the first event in the year. The new lab, located south of campus near the credit union, was opened with a big party which a substantial majority of the faculty and students attended. Because of the physical separation between most of the labs in this department, it was good to see all the plant biology people together, and it was an excellent opportunity to meet new people. New graduate students Margaret Gawienowski (with professional experience in balloon arrangement), Elizabeth Kupfer, and Ron Hutchison helped set up and decorate. Alicia Lesnikowska provided much help and the music (rocking out at the rock house) for the event. The event was a remarkable success. This was evident from the number of people whispering to each other: "And who is that person? Is he/she in our department or is he/she someone's husband/wife? He/she is? Are you sure? How come I've never seen him/her before? Is he/she on the picture board?"

The annual Christmas Party was held at the home of Dave Seigler this year. The timing was splendid for the event; it was a clear evening with only a slight powder of snow on the ground, and Mrs. Seigler had just bought and put up a new set of drapes. The pleasant and relaxing party was organized by Anita Brinker, Alicia Lesnikowska, Kaoru Kitajima, and Heidi Feiler. As usual there was a bountiful supply of delicious munchies and drinks and, of course, plenty of Christmas carol songbooks available for folks to warble with the recently retuned piano.

The annual T-Shirt Drive was exceptionally well organized by Imara Perera and Ron Hutchison this year. This is the third year of this PBAG fund raiser, and is by far the most successful one yet. Plant Biology T-shirt designs are submitted to the T-shirt committee and are later posted near the mailboxes. In the following week ballots are distributed to all PBAGers and PBARFers (PIBio and related faculty). The design receiving the most votes then becomes the design of the year T-shirt and the artist (Jackie Worden this year) wins a complementary T-shirt. The products sold are high quality T-shirts and sweat-shirts in a number of bright colors. Because PBAGS receives no money from the school, the T-shirt Drive is essential to keep our PBAG finances (i.e., overdue Xerox bills) in the black. PBAGS (with a lot of help from the secretaries, especially Martha Plummer), was able to make over \$150 in 1987 sales. The second wave of orders in 1988 was equally successful with additional products—kid size T-shirts and caps—available for purchase. If any of you out-of-towners wish to purchase T-shirts for the upcoming year, please place your order (ask the department secretary for details) and



Ann Pizanis served this year as the Student Representative on the Graduate Affairs Committee and is the recipient of an NIH Cellular and Molecular Biology Traineeship.



Vincent Ling served this year as the chairperson of PBAGS and it is perhaps understandable that PBAGS was the only departmental and affiliated group in SOLS to have a dollar surplus! The "Money Blower" this year is a canoe trip starting at Turkey Run.



Kaoru Kitajima, Student Representative on the Advisory Committee. Kaoru admits it was quite a "learning experience" to see how departmental governance works! She is the recipient of support from Sigma Xi Grants-in-Aid, the Center for Latin American and Caribbean Studies, and a Clark Summer Grant.



David Clarke has an unusual research assistantship that permits him to learn and help in the greenhouse operations of the Department. Dave is the recipient of a Field Research Grant from the Center for Latin American and Caribbean Studies as well as a J. B. Hanson Research and Travel Award.



Jane Molofsky was the Student Representative on the Instruction Committee this year and is the recipient of an award from the J. B. Hanson Travel fund.

send a check made payable to PBAGS to the Plant Biology office one week before Thanksgiving.

The PBAGS seminars were organized this year by Swati Basu and Kaoru Kitajima. So far, we have had a number of PBAGers (Kaoru, Adriana Ortiz Lopez, Scott Heckathorn, and Phil Burton) present very informal (i.e. Nova-like) talks about their research. Because of the vast diversity of disciplines within the Plant Biology department, these seminars provide a friendly forum in which PBAGers (and PBARFers) can be involved and ask basic questions on research outside one's specialty without sounding completely stupid. Example: "What does a flash induced change in carotene ab-



Denise A. Thiede, Treasurer for PBAGS, is recipient of travel and research awards from the Graduate College and the J. B. Hanson fund.

Alicia D. Lesnikowska Received Award for Outstanding Teaching in Plant Biology

The award for excellence in teaching was presented to Alicia D. Lesnikowska on May 11, 1988. The citation reads as follows:

"Alicia Lesnikowska is a teacher who has had a great deal of experience in a wide variety of courses during her graduate career. She has taught in introductory biology and plant biology courses as well as upper level courses in systematics, paleobotany, and phycology. In these courses Alicia has been a successful teacher of freshman and sophomore students in general education and pre-professional programs as well as fellow graduate students in the Plant Biology program. Students, co-workers, and professors have considered her to be an excellent teacher.

Alicia has a broad understanding of biology, making it possible for her to effectively teach a variety of subjects to students with very different motivations and prior experiences in science.

However, excellent teaching requires much more than excellent understanding of the subject matter. It requires an understanding of the needs of each student and the ability to help those who are struggling to understand. Alicia has these qualities as well as the energy, enthusiasm, and concern for her students that is necessary to help them to succeed. The people with whom she has worked comment on Alicia's dependability, conscientiousness, and commitment to teaching that has resulted in her doing more than was necessary or expected. She has been involved with the improvement of instruction by contributing ideas and materials for courses and has provided a role model for other teaching assistants. Whether or not we have had the privilege of personally working with Alicia in the classroom, everyone in the Department of Plant Biology has benefited from her teaching excellence."

Alicia was presented with an award certificate and a \$300 grant from the J. B. Hanson Research and Travel Fund for use in research.

Alicia is completing her doctorate on the "Paleoecology and Evolution of Permineralized Coal-Swamp Marattia-

nars also provide a useful forum for people to present practice prelims and practice final defenses. PBAGers who attend or who are involved with these seminars usually gain a greater appreciation (i.e., "cultural enlightenment") for other work that is going on in this multifaceted department.

More events are planned for the Spring, including the New Greenhouse warming, the PBAG money blower event (to use the excess proceeds from the T-shirt sales), the Spring Picnic and the end-of-the-PBAG-seminar-series pizza party.



Alicia D. Lesnikowska at the gravel bench with sliced specimens of anatomically preserved tree ferns from the tropical coal age.

THE PLANT BIOLOGY AND AFFILIATED GRADUATE-STUDENTS ORGANIZATION (continued)

sorbance have to do with photophosphorylation?", "What does water stress in halophytes have to do with corn?", "Are there going to be any trees left in Europe after all the acid rain finishes coming down?", "Why aren't the European countries involved in doing something about it?" and of

List of Research Awards and Fellowships for CONTINUING Plant Biology Students

McKnight Foundation Research Awards

Douglas Carter
Ronald S. Hutchison
(supplementation)
Beverly Marcotte
Susan Martino
Sabine Rundle
Eiji Takahashi
Elizabeth Kupfer

Francis M. & Harlie M. Clark Summer Grant

Kaoru Kitajima

Francis M. & Harlie M. Clark Research Support Grant

Anita Brinker

Graduate College Conference Travel Support

Dennis B. Lazof (travel)
Jane Molofsky (travel)
Denise A. Thiede (research & travel)
Linda K. Wickens (travel)

NIH Cellular & Molecular Biology Traineeships

Ronald S. Hutchison
Ann Pizanis

Summer University Fellowships

Carol A. Kelly
Warren F. Lamboy

Sigma Xi Grants-in-Aid

Scott A. Heckathorn
Kaoru Kitajima
Alicia D. Lesnikowska

Chateaubriand Prize for Exact Sciences and Engineering, France

Alicia D. Lesnikowska

Field Research Grant, Center for Latin American and Caribbean Studies

H. David Clarke
Kaoru Kitajima

J. B. Hanson Research and Travel Award

H. David Clarke
Jane Molofsky
Denise A. Thiede
Linda K. Wickens

Geological Society of America Research Grant

Debra A. Willard

Gathering of the McKnight-Photosynthesis Group at Allerton

The second McKnight-Photosynthesis Group retreat, while not blessed with the unseasonably warm weather of last year, was nonetheless a good time for all. About 60 faculty, students and postdocs gathered at Allerton House late on a Thursday afternoon in mid-March for a very informal meeting to exchange ideas, discuss results and simply socialize. Most of us saw sizable groups of white tail deer on the way into the park, probably accounting for the rumors about recent road kills that circulated around the dining hall as to the possible identity of the proteinous substance on our dinner plates.

A highlight of the meeting was, without question, two plenary talks presented Thursday evening. Govindjee treated us to a carefully researched but wonderfully personalized accounting of the Emerson Era of photosynthesis research at Illinois. The best creative fiction could hardly have been more fascinating than the actual history of Warburg's six-month visit to Illinois in 1949 to resolve the controversy over photosynthetic quantum yield with Emerson. Remarkably, despite working in the same laboratory in the Natural History Building and the same algal cultures (grown at Warburg's insistence in the north window of an un-

heated lab), no resolution was achieved. In fact, Warburg died still clinging to the erroneous belief that the quantum requirement of CO₂ reduction was 4. Anything factual being said in the front of the room stopped abruptly when Govindjee sat down and John Cheeseman stepped up to the podium to talk about his "vision" of interdisciplinary research. John's entertaining description of the different approaches by which he imagined a physiologist, a biochemist and a biophysicist would go about investigating the underlying mechanism for clothes cleaning activity of residential neighborhoods defies recounting; you had to be there!

After ample black coffee had been administered as an antidote for Thursday night's informal research discussion period, the Friday morning session got underway. Traditionally, two years now, these talks are given by students and postdocs. After lunch, about 30 posters and instrument demonstrations were on display as well as Illinois playing West Texas State on wide-screen television.

With the weekend to recover, it appeared on Monday that no one had suffered any permanent damage and Allerton House has agreed to let us return next year. The retreat was a success in many ways including the excellent success we had in recruiting prospective students that attended the retreat.



Snowball fights at Allerton Park in the early spring! McKnight Award students Beverly Marcottes, Sabine Rundle, and Ron Hutchison.

New Student Awards for 1988-89

University of Illinois Fellowships
Denise H. Sparrow

Teachers Ranked as Excellent and Outstanding by Their Students—An Incomplete List

The following teachers received special recognition in the fall 1987 and spring 1988 listings of teachers ranked as excellent and/or outstanding*:

R. Edward Dole* in Plant biology 102 (Plant, Environment and Man) (listed both semesters)

Govindjee in Honors Biology 251 (The Organism)

Heide Feiler* in Plant Biology 100

Carol Kelly in Biology 110

Bill Schy in Plant Biology 100

Denise Thiede in Biology 111

Elma Tournisalo* in Plant Biology 102 (listed both semesters)

Special congratulations to each of these teachers and to the many graduate students and staff members who have contributed so significantly to our undergraduate teaching program.

View From the First Floor

One of the advantages of writing a column once a year is that I feel no need either to remember what I wrote, or to accept responsibility for it the next year. I seem to remember declaring, last year, feelings of great promise and rosy futures, with the arrival of new growth facilities, a greenhouse under construction, new faculty members and all that.

Pretty much, things have worked out right. But stung by allegations that serious research can't be done in a place as nice as the Sierras, Dr. Evan DeLucia is retraining as a plumber. He plans to spend his summer with the tubes, pipes and connectors of an infrared gas analysis system in his lab. He is refusing jobs to remodel bathrooms, however. Meanwhile, he's used his CRGO Forest Biology grant to pay a post-doc, Dr. Tad Day (Colorado State) to go to the mountains. He also claims to be studying the control of photosynthesis by soil temperature. Closer to home, DeLucia's grad student, Scott Heckathorn, is looking at the growth regulation of prairie grasses by multiple resource limitation. DeLucia denies that this was inspired by the sad state of his front lawn.

Tropical ecosystems are incredibly productive, but if you think getting tenure is hard, you should try getting established as a tropical tree. For Dr. Carol Augspurger, understanding why seedlings don't make it is the next step in tropical forest population ecology. And this is honest retraining, folks. Sanctioned and supported by the college itself (LAS Fellow for Studies in a Sec-

ond Discipline), Carol will spend the spring semester next year learning plant pathology. Then she'll be attacking the plant pathogen relations of establishing seedlings, and by next year we might be able to include a picture of her in a lab coat with a test tube.

To some, the idea of Dr. Augspurger doing pathology is as strange as the idea of Dr. John Cheeseman doing molecular biology. The quintessential physiologist, it seems, was so clear cut (not clean cut) that one molecular biologist speaking from on high (the second floor) said, "If someone had told me five years ago that Cheeseman would run a southern blot, I'd have said they were crazy." But he, or his students, have.

This sort of behavior cannot go unchallenged, and an alternative explanation was that Cheeseman was simply providing safe haven for Cleveland Indians fans who had been cast out from everywhere else. He refused to comment on the fact that three of the four new additions or rotations students in the lab are in that category. "We said nothing in any of the grants about the moral qualifications for doing this research," he said, adding, "but the boys are only one game out and in second place, and this late in the season, that's a good sign."

So from the inside, the rosiness predicted last year is shimmering and tenuous in its reality. Success breeds uncertainty, and the realization that maybe the techniques we know aren't enough. And this year, the view from the first floor is promising uncertainty, incipient retraining, and the joy that comes from knowing that you won't remember this next year.

In December 1987, Dan Bush joined the faculty as Assistant professor of Plant Biology and Plant Physiologist with the USDA/ARS Photosynthesis Group located in Davenport Hall. Dan's college training was in California with his bachelors at California State University at Humboldt and his doctorate from Berkeley in physiological and molecular plant biology. His research interests are in membrane transport proteins and transport processes, in part, centered on the movement of sucrose.

Dan has lived in many parts of the country and world, as a "military brat," and spent his past four years in post-doctoral research at the University of Maryland, the Los Alamos National Laboratory (Isotope and Nuclear Chemistry), and the USDA-ARS Plant photobiology Laboratory at Beltsville.

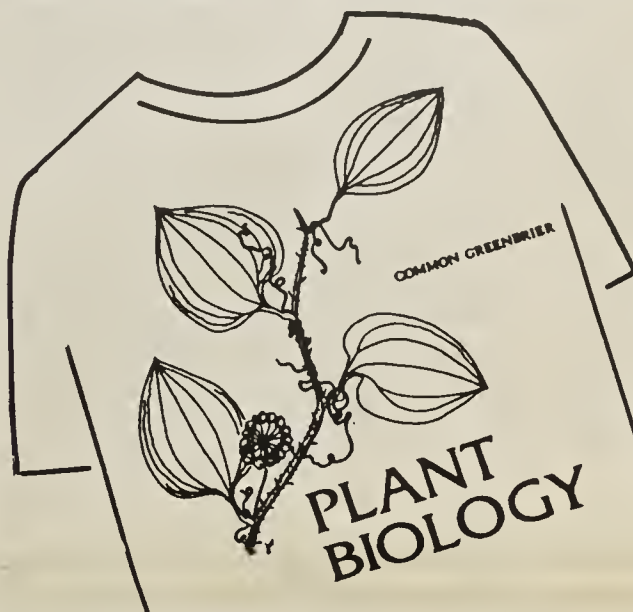
The Bushes have two children, 3 and 5 years old, and have recently found "just the right house" on Oregon Street (Urbana).

Plant Ecology 1987-88

This has been an active and exciting year for the ecologists in Plant Biology. Evan DeLucia has been at the University for just over a year and, with help from Scott Heckathorn, has transformed a freshly painted but empty room into a well-equipped physiological ecology laboratory. Scott, Evan's first graduate student, has initiated a growth-chamber study of stomatal regulation of water loss in two tallgrass prairie species, *Spartina pectinata* and *Andropogon gerardii*. Scott will be continuing this study during the summer at Konza Prairie in Kansas, and was recently awarded a grant from Sigma Xi to support his research. The most recent person to join the lab is Dr. Tad Day. Tad is a postdoctoral research associate who received his doctorate from Colorado State University, and will be working with Evan on a USDA sponsored study of the effects of low root temperature on photosynthesis in sub-alpine conifers. Evan and Tad will be doing their field research in the Medi-

cine Bow Mountains of Montana during this May.

Carol Augspurger is continuing her tropical studies investigating how seed distributions determined by dispersal events influence seedling distributions. Particular emphasis is placed on understanding the factors determining seedling mortality caused by pathogens. She also is initiating studies of *Brassica campestris* and its pathogen, *Albugo canadensis*, to identify factors that determine the relative frequency of resistant genotypes in a population. Her graduate students are involved in these projects: evolution of the phenology of germination, flowering, and fruiting in *Cassia fasciculata* (Carol Kelly), morphological and physiological aspects of cotyledonous seedlings in tropical tree species (Kaoru Kitajima), effects of leaf litter on seedling establishment of tropical tree species (Jane Molofsky), and causes of variation in seed distributions of *Lepidium campestre* (Denise Thiede).



The 1988 Plant Biology T-shirt design contest was won by Jackie Worden who used one of the drawings she did for the *Guide to Common Woody Plants of Allerton Park* by Almut G. Jones and David T. Bell. In her tenure at the U. of I., Jackie worked as an undergrad for Dr. Bazzaz and most recently as Assistant to the Curator in the Herbarium. She will leave that position at the end of May and continue to pursue her many interests at her home in Charleston. Our good wishes go with her.

"Mycology is Better Than Yours"

That is the sign at the entrance to Carol Shearer's lab on the first floor of Morrill Hall next door to fellow fungi researcher, Richard Crang. They share not only the help of Research Specialist Lisa J. Cerligione, but the occasional soot particles that are dismal reminders of the fire last summer. Richard's research, among many other projects, is specifically directed toward the incorporation of phosphorous and heavy metals into fungal cells and the interrelationships of these elements in cell-toxicity studies. These require techniques of low temperature specimen preparation and subsequent elemental analyses by means of analytical electron microscopy (see article on Electron Microscopy and Plant Biology).

Mycological research at the University of Illinois began during the 1860's with the plant disease survey of Illinois conducted by T. J. Burrill, A. B. Seymour, and co-workers. Since that time, outstanding University of Illinois mycologists, such as F. L. Stevens, L. Shanor, and D. P. Rogers, have played an important role in the development of North American Mycology.

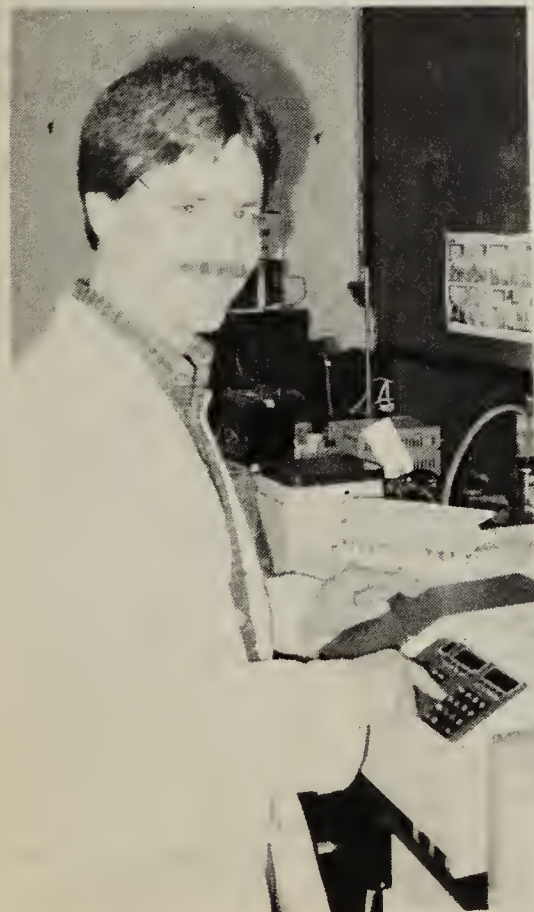
Currently, graduate programs in mycology leading to the M.S. and Ph.D. degree are available in both the Departments of Plant Biology and Plant Pathology. These programs are directed by Carol Shearer in Plant Biology and Dean Glawe and Lee Crane in Plant Pathology. Interaction among these three mycologists through courses,

seminars and shared research has led to a strong program in mycology. Within the program, students may obtain training in a variety of mycological areas such as fungal morphology and development, plant pathology, systematics, and ecology.

The mycology faculty have a wide range of research interests. Carol Shearer is interested in factors regulating the community structure and decomposition activities of fungi imperfecti and ascomycetes in freshwater and marine habitats. She has studied changes in community structure along salinity and pH gradients and seasonal changes in the interactions between species competing for leaves and twigs in flowing water. Studies of growth responses to various physical and chemical parameters and enzymatic potential of axenic cultures of these fungi are coupled with field studies. Related to this work are systematic studies of fungi that decompose plant debris in freshwater streams, swamps and marshes. New research directions include the role of antibiotics in regulating fungal community structure, fungal degradation of biodegradable plastics, and a systematic study of the genus *Leptosphaeria*.

Lee Crane is primarily interested in the systematics of Fungi Imperfecti and Ascomycetes. His current research program includes: a revision of the genus *Toninia*, and a systematic study of the fungi imperfecti in aquatic environments and neotropical regions. New research directions include the isolation and identification of hyperparasitic

Daniel R. Bush



"Mycology is Better Than Yours" (continued)

runy and in collaboration with Carol Shearer a systematic study of the genus *Leptosphaeria*.

Dean Glawe is interested in the biology and taxonomy of Pyrenomycetes and their asexual states. His current research emphasis is on determining evolutionary relationships based on comparative morphology; in the near future molecular level investigations will be undertaken as part of this project. Research is also underway on fungus-colonizing cysts of the soybean cyst nematode, the world's most important soybean pathogen, with the goal of determining whether fungi can serve as biological control agents.

In addition to the mycological staff, there are outstanding facilities for carrying out mycological research at Illinois. Individual laboratories are modern and well-equipped for a variety of research activities. The mycological herbarium of the University of Illinois contains 70,000 specimens including 1,935 types. This collection is especially rich in Meliolales of the Neotropics, resupinate basidiomycetes, and exsiccata sets. The mycological herbarium of the Illinois Natural History Survey contains 46,500 specimens including 500 types and represents perhaps the finest collection of plant pathogenic fungi in the midwest. Materials from both herbaria are available for use by researchers. The University's library contains an excellent collection of mycological literature.

At a time when positions and programs in Mycology are disappearing from Universities and Colleges at an alarming rate, the Mycology Program at the University of Illinois represents one of the few programs remaining where students can receive both broad and in-depth training in mycology.

Faculty in the News

William L. Ogren, Plant Biology Affiliate, Professor of Agronomy, and USDA-ARS Group Leader, was elected to the American Academy of Arts and Sciences in June 1987. Bill is a Fellow of the National Academy of Sciences.

C. John Whitmarsh, Associate Professor of Plant Biology and member of the USDA-ARS Photosynthesis Group, is the 1988-89 Program Manager of the Photosynthesis Panel of the USDA Competitive Research Grants.

Govindjee, Professor of Biophysics and Plant Biology, has been appointed to the Editorial Board of the National Academy of Science Letters of India. He was elected a Fellow of the Academy in 1978.

IN PRESS PUBLICATIONS IN PLANT BIOLOGY FOR FALL 1988

Crang, R. E. and Karen Klomparens (Editors). 1988. *Artifacts in Biological Electron Microscopy*. Plenum Publishing Co., NY. (Will be out in late June or July).

Nickrent, D. L., W. H. Eshbaugh, and T. K. Wilson. *The vascular flora of Andros Island, Bahamas*. Kendall/Hunt Publishing Co., Dubuque, Iowa.

Schuler, M. A. and R. E. Zielinski. *Methods in Plant Molecular Biology* (a new laboratory manual). Academic Press ("harvard") the Jovanovich Publishing Co.

Molecular Skid Row Expanded

The "gang of three" plant molecular biologists on the second floor of Morrill Hall—Mary Schuler, Tom Jacobs, and Ray Zielinski—have been busy over the past couple of years corrupting the minds of other members of the Department with the gospel of gene cloning. As a result, they have been joined in their molecular approaches to understanding plant physiology and development by several other members of the Plant Biology faculty this past year. (Does this mean that molecular-ese will be spoken on every floor of Morrill Hall?!) After participating in the Experimental Methods in Plant Molecular Biology laboratory course (PB339) as students, Colin Wraight and John Cheeseman have launched into the worlds of site-directed mutagenesis and *Agrobacterium*-mediated plant transformation, respectively. In addition, Dan Nickrent, through his connection with the Molecular Evolution group here at UI and with Liz Zimmer at LSU, has embarked on phylogenetic studies using rRNA sequences as molecular markers. The molecular biology bug has even bitten physiological ecologist Evan DeLucia, who is interested in the biology of atrazine-resistant *Amaranthus* (pig weed), and who may be spending some time verifying his physiological measurements of resistance with blot hybridization assays of chloroplast DNAs isolated from resistant and sensitive plants. (There is no truth to the rumor that Ray talked Evan into this work in the middle of a basketball game at Huff Gym when Evan was too tired to say no.)

The trend of utilizing some molecular approaches, in combination with cellular and biochemical techniques, to explore classical problems of plant physiology, development and evolution is very much in evidence across the UI campus as well as in Plant Biology. One of the important forces facilitating this trend is the continued popularity of the experimental Methods in Plant Molecular Biology laboratory course, which completed its third cycle of instruction this past year. In the process, 22 newly trained, budding gene cloners were unleashed into various laboratories on campus. (Has anyone checked the NIH Guidelines to see if releasing this large of an environmental burden of potential recombinants is hazardous, or legal?) Included in this group were a number of students in the McKnight Photosynthesis Program, who presumably will con-

tinue to spread the molecular gospel—perhaps even unto the lands of single-turnover flashes. As was the case last year, the culprits responsible for continuing this trend were Mary Schuler, Tom Jacobs and Buddy Orozco. The laboratory manual developed for the course by Schuler and Zielinski, having been student-proofed (more or less) over the three year life span of the lab, is slated for publication by Academic Press this summer. (After enduring numerous revisions, with great forbearance, from two authors who do not fully understand the meaning of the word *deadline*, Sheila Hunt is looking forward with great anticipation to summer vacation this year!)

Activities in the molecular row laboratories have continued to expand over this past year, with several new students added to the different laboratories. Mary Schuler and her students continue to focus on phenylpropanoid pathway enzymes and the genes encoding them, as well as on splicing of plant mRNA precursors. In the past year, they completed a characterization of cytochrome b_5 and NADH cytochrome b_5 reductase from pea. Studies examining the expression and organization of the phenylpropanoid pathway protein genes are now underway. Mary's group has also compiled evidence for distinct groups of introns (intervening sequences that must be spliced out of mRNA precursors) in plants by comparing the DNA sequences at the splice junctions of numerous monocot and dicot genes. In conjunction with this computer analysis, she and her students are continuing to work on an *in vitro* system which will mimic the plant splicing reactions. It is hoped that the results of such studies will enable future genetic engineers to overcome some of the problems encountered thus far in expressing genes isolated from one plant species and placed in another unrelated species.

Just down the hall from Mary's lab, the busy activity of students setting up experiments has replaced the sounds of equipment and supplies being uncrated as Tom Jacob's lab has been transformed (by *Rhizobium* nodulation?) from the set-up lag phase to an active, exponential growth phase. The major objective of Tom's work is to elucidate the pathway by which mature root cells are induced to become meristematic and grow to form a root nodule. He and his students have been busy infecting otherwise unsuspecting alfalfa plants with *Rhizobium* to induce nodule formation and extracting

mRNAs from the infected roots. It is hoped that, if the right time following infection is selected, some of the root mRNAs will represent growth-regulating genes specifically switched on by the bacteria. They hope to get their hands on these molecules by making cDNA clones and utilizing subtractive hybridization techniques. "We have already identified a function in alfalfa plants which controls cell division, one of the plant's first repertoire of responses to *Rhizobium*... We are excited that, having found one of these genes in plants, we can mine this strike to uncover the rest of the network..." Tom's hope is that these cell division controlling genes will provide them with a tool to help uncover the processes involved in plant organ formation. Another of Tom's activities this past year was to successfully reactivate the Plant Development course (PB335), which greatly strengthened the anatomical/developmental segment of the Department's course offerings. The lecture topics included cell and molecular biological approaches to developmental analyses, as well as the more familiar cell lineage analyses, and pattern formation.

At the far (side) end of molecular row, Ray Zielinski's lab has busily continued its attack on the mechanism controlling gene expression during leaf cell development. These studies have continued to focus on two model genes: rubisco activase, a chloroplast protein that is co-expressed with the two subunits of rubisco, the protein it activates *in vivo*, and calmodulin, a calcium-binding protein whose level of expression is correlated with the proliferation state of plant cells. cDNAs encoding these proteins from barley have been isolated and are being utilized as probes to ask at what level(s) their expression is regulated. "What we would like to understand is how the genes needed for maintaining a relatively undifferentiated, meristematic cell are switched off, and those genes needed for differentiation are switched on as a leaf cell develops." Although it seems as though half the plant scientists on campus have come to his lab to learn cDNA cloning, Ray insists that he's actually a plant physiologist, and not a gene jock. However, a lot of lectures on phytohormone- and phytochrome-induced gene expression have somehow found their way into his Plant Physiology (PB330) syllabus. Has the hormone physiologist's experimental maxim of spray, pray and weigh evolved into clone and groan?

Department Celebrates New Facilities

From the cutting and storage of dead plants (fossils, that is) to the growing of the green ones, new Plant Biology facilities came on line this academic year from summer to spring. The fall social gathering of the students and staff at the Paleobotanical Research Center was one of the memorable occasions for all of us. The spacious warehouse not only accommodates thousands of fossil-plant specimens but the aisles and work areas definitely have potential for dances as well as small groups deep in conversation. It was a "lab warming" that also celebrated the completed remodeling of the east end of the warehouse into an all-weather processing center, curatorial room, and some amenities like a john and utilities!

More quietly but with every bit as much enthusiasm, the Department watched one, two and then three new, green, growth chambers installed in the newly opened cavern between hallways on the first floor of Morrill Hall. John Cheeseman and Paul Mortensen organized the push to get high quality environmentally controlled growth facilities for our departmental colleagues and their students. We especially thank DuPont, SOLS and the Research Board for the means to mega leap to the new equipment. It is not easy keeping things green in Morrill Hall!

And eight days past the "wearing of the green" (March 25th), we had a splendid "lab warming" of the newest and largest research lab of the Depart-

ment, located in the recently finished Plant Sciences Greenhouse Complex. The lab, designated generally for Ecology-Plant Physiology, serves the needs of all the Plant Biology researchers using the adjacent greenhouses with basic instrumentation for their work. There were a lot of smiling faces at the party and none with a bigger grin than Evan DeLucia's.

The get-together gave many their first chance to walk through the still-vacant greenhouses and inquire about the "empty swimming pool" in the conservatory. The planning and logistics for plant science teaching and research are on the verge of realizing some exciting capabilities with these new facilities (see article on the greenhouses).

The Paleobotanical Facility



Heather Young from PB102 and Jim Kramer sporting the 1986 and 1987 Plant Biology T-shirts



Flowers among the stacks of fossil plants—Sharon Rogers-Werneke, Alena Maurice and Sheila Hunt.



A gathering of families with John Cheeseman, his daughter Alison (back view), Sara Ort holding Linnea Zielinski, Ray and Ann Zielinski, Colin Wraight (who else could block so much of the view with his back!) and Don Ort.



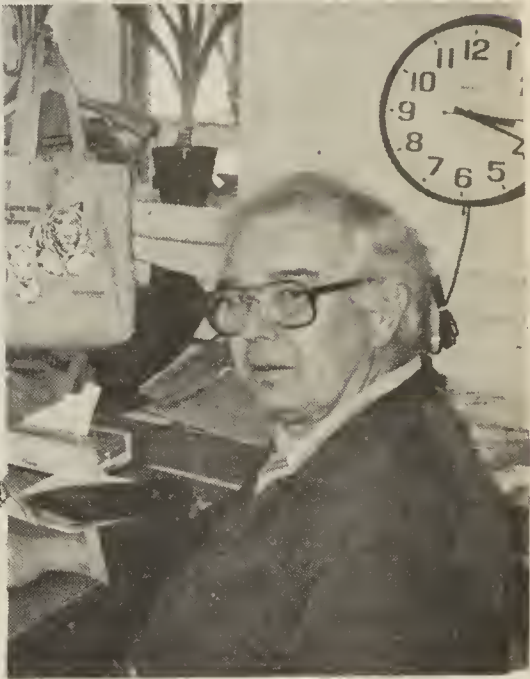
A fall gathering outside the Paleobotany Center (left to right) with Susan Gabay-Laughnan, Rajni Govindjee, Gracia Zabala, Larry Hoffman, Govindjee and Hassan Zare-Maivan (class of 1987).



Party time at the Paleo lab, left to right, with Swati Basu, Vincent Ling, Ed Dole, Margaret Gawienowski and Tom Jacobs.



This could be a back-logged U.S. mail room, but it is only the proverbial "16 tons of no. 9 coal" balls on the floor to be sectioned this summer.



Tom Phillips in his "hideout" on the South Farm where there is a window with a view

Ecology/Physiology Lab in the Greenhouse



Space for snacks now and instruments later—left to right, Susan Martino, Paul Mortensen, Stanley Friedman (Acting SOLS Director), Dave Childress (Electronic Technician for the greenhouse), John Ebinger, David Clarke, Anita Brinker, and John Cheeseman.



Sheila Hunt and Martha Plummer, finally cornered for a picture at the splendid party they organized and carried off!



Tad Day, new postdoc in Evan DeLucia's lab, joined the Department in late March.



Jeff Dawson, Department of Forestry, and Govindjee. Jeff is the next door lab neighbor to the Ecology/Physiology lab at the greenhouse.



In this advertisement for "Coke" are Rex Mahannah, Almut Jones, and just a glimpse of Laurel McKee.



Just back from a tour with the greenhouse group are David Clarke (graduate assistant in greenhouses), John Ebinger (teaches our field botany summer course), Anita Brinker (back to camera), David Seigler and Jim Kramer (greenhouse manager).



Mary Schuler and Rajni Govindjee welcoming friends to the lab warming.



Vincent Ling, chair of the PBAGers, and contributing writer and photographer for the NEWSLETTER, suggests focusing on the cookie!



Jim Kramer pointing out the plans for the conservatory.



Electronics Technician Dave Childress and Greenhouse Manager James Kramer in the control center for environmental monitoring of the new greenhouses.



Elizabeth Kupfer in the new Ecology/Physiology lab next to the greenhouses.



Mary Ann Topa in the Ecology/Physiology lab at the greenhouse.

Where Have All the Flowers Gone—Long Time Passing—Our Friends and Former Faculty

Personal and professional ties developed here in Urbana among faculty never really separate despite distance and time. Addresses and positions do, so we wanted to update everyone about colleagues from the 60s to the 80s who represent an important part of our tradition in Plant Biology and are now located elsewhere across the North American continent, from A almost to Z!

In March 1988 Charles J. Arntzen departed DuPont (Director of Biotechnology Research, Agricultural Products Department) to become Deputy Chancellor of Agriculture and Dean of the College of Agriculture at Texas A&M University in College Station. Charlie and John Boyer should have arranged a house exchange, as John left Texas A&M in October 1987 to take up his DuPont Professorship at the University of Delaware's College of Agriculture and College of Marine Sciences at the Lewes campus, about two hours drive from Newark. John's water-stress research on agricultural plants as well as marine organisms continues in a new lab which has a marvelous view—salt marshes in one direction and Delaware Bay in another. His assessment of the view was that "Zane would go wild!" John's new address is: College of Marine Studies, 700 Pilottown Road, University of Delaware, Lewes, 19958. Both Charlie and John are past presidents of the American Society of Plant Physiologists and were recipients of the Charles Albert Shull Award.

Professor Emeritus of Botany Lindsay Black, who retired 12 years ago, said that he and his wife had mulled over the possibility for over a year of moving from Urbana and recently decided to head east. They will take up their new residence in east Long Island at 550 Stratford Lane, Ridge, NY 11961, about four miles from their daughter's family. Needless to say, we wish them well in their late summer move. Don and Billy Rogers still reside at 1809 20th St., NE, Auburn, Washington 98002.

Fakhri Bazzaz, who is an alumnus (class of 1963), returns to Urbana several times a year to visit the last of his U. of I. graduate students. He also has a thriving floor of research labs in the Department of Organismic Biology at

Harvard. His new greenhouse facilities occupy about half of what was the parking lot adjacent to the building. Fakhri served as both our Head of Department and Acting director of SOLS in his last year here (1983-84).

Lawrence C. Bliss, who expanded the ecological programs in botany at Urbana two decades ago (and who was Fakhri's advisor), moved to the University of Alberta and later to the University of Washington at Seattle. Larry has recently stepped down as department head after a long term of leadership. He looks as rugged and ready for field work as ever. Larry has had a long-term research involvement in alpine and tundra communities including Devon Island in the high arctic.

Ted Delevoryas, who is both an alumnus (class of 1954) and colleague from the days when our research labs and departmental offices were in The Natural History Building, is currently Director of the Biological Sciences Division at the University of Texas at Austin. Ted has served as head of the Department of Botany there, is a past president of the Botanical Society of America and continues as Editor-in-Chief of the *American Journal of Botany*. His sustained research with Mesozoic gymnosperms keeps him as trim as ever with field work. Ted was at Yale before and after being a faculty member at Urbana.

Professor Emeritus of Plant Physiology John B. Hanson has been busy in the assembly of archival records for the history of the American Society of Plant Physiologists which he was commissioned to write after retirement. It is finished now and should be in print by the fall. Jack is also a past president of the society. Jack is in and out of the office often and really looks good. We celebrated his 70th birthday in March at what was called the "big blow out!" He and Becky regularly attend Departmental celebrations and still live at 610 Burkwood, Urbana, IL 61801.

David T. Ho finished up those graduate students who began their studies at U. of I. last year and is a neighbor not too far away in the Department of Biology, Washington University, St. Louis.

Jim Nance, who retired in 1974, still lives in St. Joseph, IL (R.R. #1, Box 151, Zip 61873).

Dominick Palolillo just stepped down as chair of the Plant Biology Section at Cornell, and in a recent phone visit we exchanged "horror stories" about remodeling and renovation—a never-ending saga! I am reminded that Dom was the Acting Head of our Department the last year he was with us (1969-70). He still owes us an 8"x10" for the wall to fill a symbolic missing face and to remind us of an important colleague in our recent history.

Wilson N. Stewart's address is Box 42, Kootenay Bay, British Columbia, V0B1X0 Canada. As Department Chair, Bill helped bring a number of the senior faculty to Urbana and later served in that capacity at the University of Alberta. Upon retirement he captured his infectious enthusiasm as a teacher of paleobotany in his textbook, the most readable one available. Bill started the paleobotanical studies and collections of coal balls at the University and pioneered, along with his students, in Pennsylvanian-age plant research.

With their migrations toward the coasts, California has become the new home for three of our former colleagues. Herbert Stern is still at the Department of Botany, University of California-San Diego at La Jolla. Herb was back on campus last year for the special symposium and celebration for the Biology Honors Program that he and David Nanney co-founded. Larry Vanderhoef, who moved from being our Department Head to Provost at University of Maryland, is currently the Executive Vice Chancellor of Academic Affairs at the University of California at Davis. Larry has continued to help our department with needed information and advice, and we have seen the fruition of several of the projects he initiated here almost a decade ago. It is a touch of nostalgia to hear his distinctive "So long" instead of the midwestern "Good bye" on the phone.

David Young has just recently moved from the directorship of the Bailey Hortorium at Cornell to become the director of the Santa Barbara Botanical Garden, 1212 Mission Canyon Road, Santa Barbara, CA 93105. News reaching us indicates that Dave is a suntanned and happy southern California native back in his kind of habitat!

News Highlights of SOLS

Administrative Change

Professor A. F. (Rick) Horwitz joins the SOLS faculty in the fall of 1987 as Head of the Department of Anatomical Sciences, soon to be called the Department of Cell and Structural Biology. Professor Stanley Friedman has served as Acting Director of the School of Life Sciences for AY 1987-88 while Samuel Kaplan is on sabbatical in Switzerland.

Three department heads are stepping down at the end of academic year 1987-88: George Batzli, Department of Ecology, Ethology and Evolution; Dennis Buetow, Department of Physiology and Biophysics; and Tom Phillips, Department of Plant Biology. Professor Batzli will return to the headship after sabbatical leave. Professor Buetow will also be on sabbatical leave and John Zehr, the Distinguished SOLS Lecturer of 1986-87 and current elected representative on the SOLS Executive Committee, will become head of Physiology and Biophysics.

\$400,000 NSF Grant to Establish a Biotechnology Center

The new center at Urbana will be incorporated in the School of Life Sciences and will consist of two separate groups. One, directed by Jordan Konisky, Head of the Department of Microbiology, and by Carl R. Woese, who pioneered in the study of the archaebacteria, will explore that primitive group of organisms.

The second group will consist of specialists from geology, entomology, microbiology, and plant biology, and will focus on the study of the evolution of higher life forms. Thomas Uzzell, Professor of Ecology, Ethology and Evolution and Director of the University's Museum of Natural History, will head the second group. [from Illinois Alumni News, Dec. 1987]

Election of New SOLS Representative to the Executive Committee

The by-laws of the School of Life Sciences were amended in 1987 to require an elected faculty representative on the Executive Committee in addition to department heads and the biology programs director. This spring there was increased interest in the election process with five nominees put forth by the faculty: Antony (Tony) Crofts from Biophysics; Donald Ort from Plant Biology; Linda Maxson from Ecology, Ethology and Evolution; David Stocum from Cell and Structural Biology; and Judy Willis from Entomology.

LAS Dean to Georgia

William Prokasy, Dean of the Liberal Arts and Sciences College at Urbana since 1980, will assume the post of Vice President of Academic Affairs at the University of Georgia at Athens, on September 1st. The April 19th Champaign-Urbana *News-Gazette* quoted Prokasy, in part, "However, I do confess that the manner in which the state has been dealing with education, and higher education in particular, for the last 14 months or so, made the decision easier."



Richard Crang (left) and Larry Hoffman (right) at one of the Center's scanning electron microscopes viewing *Sphaeroplea* zygotes from Larry's research.

Electron Microscopy and Plant Biology

In late January, the Department's only electron microscope was dismantled and retired from service. The instrument, an Hitachi HU-11A transmission electron microscope, was nearly 25 years old and had been in continuous research operation since 1964. While the cost of maintaining the instrument had become almost prohibitive, the Department can rely on the resources of the Center for Electron Microscopy for current and future ultrastructural investigations. The Center, located in the north-wing basement of Bevier Hall, has seven active electron microscopes available to on-campus researchers at minimal cost. The director of the Center, Dr. Richard F. E. Crang, is also a member of the Plant Biology Department.

According to Dr. Crang, the Center for Electron Microscopy is the largest multi-user electron microscopy facility in the country. There are currently 140 registered researchers at the Center, about half of them making regular use of the facilities. Currently, 6 faculty and graduate students in the Plant Biology

Department are among these researchers. Some of the current work being performed at the Center by Plant Biology faculty, affiliates and students includes investigations on ultrastructural impacts on pine seedling needles and roots caused by air pollutants, a systematic study of the family *Sphaeropleaceae* in the green algae with special attention to zygote structure in the genus *Sphaeroplea*, and the characterization of species relationships in the fungal genus *Leptosphaeria*.

The major instruments at the Center include three dedicated research-quality transmission electron microscopes, three dedicated scanning electron microscopes, and one analytical electron microscope. The analytical instrument, and two of the scanning electron microscopes are coupled with x-ray detectors which enable the microscopes to be used for elemental determination in addition to their capabilities for high-resolution microscopy.

The Center is also one of the few laboratories in the nation which possesses a wide range of capabilities for low-temperature biological specimen preparation including freeze-fracturing, cryo-ultramicrotomy and the observa-

tion of whole vitreously frozen specimens. With the Center's instrumentation it is possible to quench-freeze unfixed specimens, section them at temperatures near liquid nitrogen temperature, and transfer the sections to the electron microscope where observations of fine structure and analytical procedures can be performed while still at the low temperature.

Recently, Dr. Crang has completed the editing of a book to be published in July by Plenum Publishing Company of New York entitled "Artifacts in Biological Electron Microscopy." That volume is intended to be both a reference work and possible text in defining the various types of artifacts encountered in both transmission and scanning electron microscopy. In addition, the volume attempts to describe the various underlying physical and chemical causes of artifacts, and the ways in which they may be avoided or ameliorated. Dr. Crang is currently the president of the Midwest Society of Electron Microscopists, Inc., a regional organization which includes the states of Illinois, Indiana, and Wisconsin.

Sonja Williams—What Is She Doing Now?

For the many students and faculty who have participated in Plant Biology 100 and 102 as well as 381 (Plant Ecology), you will remember an exceptional student-teacher-writer who appeared from time to time to help us and then disappeared again to another part of campus (or the world!) to do the same for other educational causes—that is Sonja Williams and she really is not just a myth that Ed Dole conjured to explain the many innovations in teaching genetics and ecology.

Since leaving (sort of) the Department in 1986, Sonja has been involved in a sustained variety of activities. Last spring she completed a curriculum on world hunger called *Exploding the Hunger Myths*, which was published by the Institute for Food and Development Policy, located in San Francisco. At present Sonja is a curriculum specialist in Agricultural Science with the Voca-

RECENT SPECIAL PUBLICATIONS PREPARED OR EDITED BY FACULTY

- Augsburger, C. K. (Editor). 1986. Tropical Biology: An Ecological Approach. OTS Press, Durham, NC. 440 pp.
- Govindjee, Amesz, J. and D. C. Fork (Editors). 1986. Light Emission by Plants and Bacteria. Academic Press, Inc. Harcourt Brace Jovanovich, Publishers. 638 pp.
- Govindjee, J. Barber, W. A. Cramer, J. H. C. Goedheer, J. Lavorel, R. Marcelle and B. Zilinskas (Editors). 1987. Excitation Energy and Electron Transfer in Photosynthesis. Martinus Nijhoff, Dordrecht, 372 pp.
- Knoll, A. H. and T. L. Phillips (Editors). 1987. Paleobotanical Perspectives on Vascular Plant Evolution. Special Issue-Review of Palaeobotany and Palynology. 50: 1-210.

Morton W. Weir Becomes Chancellor

On April 14, 1988, Morton W. Weir, interim chancellor of the Urbana-Champaign campus, was appointed chancellor, becoming the campus's fifth. Weir joined the UI faculty in 1960. From 1968 he has also served in administration: head of the Psychology Department (1968-71); vice chancellor for academic affairs (1971-79); director of the Center for Study of Youth Development (Boys Town); vice president for academic affairs, UI central administration (1982-87), and interim chancellor. For four months in 1977 he was acting chancellor, following the resignation of Jack Peltason. During that time Weir visited the Department of Botany with guests to see the research laboratories of John Boyer and Tom Phillips. Larry Vanderhoef hosted the visit.

In a television interview on the day of his appointment Weir emphasized that increased funding for the University was the top priority and he expressed deep concern about the sustained impact of the current fiscal situation on the university community.



The Crang Lab in Morrill Hall, renovated and refurbished after the summer of 1987 fire. The photo in the first picture was too graphic to show.

tional Agriculture Service of the University of Illinois. In this position she prepares documentation for activities and projects for agriculture teachers to aid in the incorporation of science concepts in their courses. So far, she has written materials on Integrated Pest Management and Insect Ecology and Genetics. Currently, she is preparing a series on Wildlife Management.

Next fall, Sonja is going away again! This time she will begin work on a doctorate in Forestry at Duke University, supported by a J. B. Duke Fellowship. To quote her, "I'm really excited about the program. I will be working with Norm Christensen (Botany and Forestry) and Dan Richter (Forestry) in physiological/community ecology."

It was surprising to find that Sonja had any spare time; those "moments" are devoted to canoeing, making pottery, some movies (that's where I saw her) and, as ever, travelling about the world! We wish her the very best.

ALUMNI NEWS

From the SOLS Newsletter

1931 Theodore M. Sperry (M.S. Botany, 1931, Ph.D. 1933) is currently the curator of the Herbarium at Pittsburgh State University, Pittsburgh, Kansas. In past years he served as president of The Kansas Ornithological Society and the Kansas Academy of Science. Between 1936 and 1941, he established the Curtis Prairie at the University of Wisconsin-Madison Arboretum.

1940 W. Harold Kessebring (M.S. Botany 1940) is retired and enjoying volunteer projects at Middletown, Ohio.

1956 Isabel McNaught Garrett Windsor (M.S. 1956, Ph.D. Plant Biology 1972) is in the Department of Virology at the University of Natal, Republic of South Africa. She also runs a regional virus diagnostic laboratory for the province of Natal.

1974 Timothy White (B.S. Botany 1974, M.S. Forestry) is working on his doctorate in Forestry at North Carolina State University. He was previously associate forester at the University of Illinois Forestry Department.

1976 D. Keith Crotz (B.S. Botany 1976, M.S. 1978) owns The American Botanist booksellers, which specializes in out-of-print botanical books, especially pre-1850 American herbals.

1976 Porter P. Lowry II (B.S. Botany 1976, M.S. 1980; Ph.D. Plant Biology 1986) is assistant curator and coordinator of the Madagascar Research program for the Missouri Botanical Garden. He is also research associate with the National Museum of Natural History, Paris, France.

Letters from Alumni and Friends

From: William L. Stern

Once again I have enjoyed the Botany Newsletter and once again I have to thank you and all those others responsible for gathering the information and for publishing it. I know this requires a great deal of effort and thought, but, believe me, from my point of view as an alumnus, it is well worth it.

A bit of news which may be worthy of publishing: in August I will be leaving for the Jodrell Laboratory, Royal Botanic Gardens, Kew, to work for three months on a monograph of the anatomy of Orchidaceae. This work was commenced by my former student, Edward S. Ayensu, who has gone off into other pursuits. The ms. has languished for several years and C. R. Metcalfe, overall editor of the "Anatomy of the Monocotyledons" series, has asked that I help to see the work to fruition. Dr. Alec M. Pridgeon, currently editor of *Lindleyana* and the *American Orchid Society Bulletin*, will collaborate in the work.

Now to the recent Newsletter: Please make the following changes/additions.

1. Richard K. Benjamin (one of my graduate student colleagues). Rancho Santa Ana Botanic Garden, 1500 North College Avenue, Claremont, CA 91711.

2. Cheng Lee Lee (another graduate student colleague). Cheng Lee returned to the People's Republic of China in the late 1950s. Address him in care of the Department of Biology, Peking University, Beijing, People's Republic of China.

3. Willard W. Payne. Current address is 1323 SE 17th Terrace, Cape Coral, FL 33904.

Department of Botany
University of Florida
Gainesville, FL 32611

From: Martin Gibbs

July 28, 1987

"F. Lyle Wynd died Thursday, July 16. G. R. Noggle earned his degree in his laboratory and I started with him until he departed the Urbana campus to chair the botany department at Michigan State. Inasmuch as I was nearing completion of my thesis, I remained in Urbana and Harry Fuller was my titular thesis advisor.

Institute for Photobiology of
Cells and Organelles
Brandeis University
Waltham, MA 02254

From: Hei-ti Hsu

Must be one of few lucky fellows to receive newsletter which was forwarded to my current address. Glad to be remembered by the Department after many years of awayness. Although received degree from Plant Pathology, I have felt much influence from Botany Faculties. Cannot be happier than to receive news from the Department. Would appreciate being kept informed all the time.

U.S. Dept. of Agriculture
Agricultural Research Service
Florist & Nursery Crops Lab.
Rm. 108, Bldg. 004; BARC-W.
Beltsville, MD 207051

From: Oswald Tippo

For some time I have been meaning to write to you to thank you for the copy of the 1987 *Botany Newsletter*. I find it an impressive account of an excellent program in a top-notch department. As you may know I take considerable pride in the progress of this department where I spent eighteen happy years. As a matter of fact it is just fifty years this fall when I first came to the Illinois campus as a fresh Ph.D.—as an instructor with the annual salary of \$1800!

Naturally I took particular delight in AGV's puckish history of the department. It is vintage Vestal.

So keep up the good work and keep the newsletters coming. Incidentally, if you will send me a set of pages 12-15, I'll be pleased to update some of the addresses, add a few graduates, and eliminate some persons who have died in recent years.

With my best to the members of the department,

Commonwealth Professor of
Botany Emeritus
Amherst, MA 01002

A letter from Evelyn Menges, dated March 25, 1988, informed us that Natalie Davis, former artist in the Department, passed away in February of this year. Evelyn lives in Rockville, Maryland, and keeps in touch with a number of us from the "old days."

199 Rollins Avenue
Apartment 206
Rockville, MD 20852

From: Danuta Frackowiak

Dear Friends,

I enjoyed very much the "Botany Newsletter" reminding me of times more than twenty years ago(!), when I was research associate in Professor E.

I. Rabinowitch's lab. It was a pleasure to receive the news about the University and Department which have so strongly influenced my scientific career. Now, being full professor of Experimental Physics, Poznan Tech. Univ., Poland, I am still working on biophysics of the photosynthesis process.

I hope that I can become a friend and obtain the next news with interesting information about my colleagues.

Best regards,
Institute of Physics
Poznan Technical University
Piotrowo 3
60-965 Poznan, Poland

From: Larry Vanderhoef

Another good job on the Newsletter. You have indeed "turned the corner." Univ. of California-Davis

PHOTOSYNTHESIS ALUMS FROM GOVINDJEE'S LAB

William J. Coleman is the recent recipient of an NSF Fellowship for work in the Chemistry Department at M.I.T. in the area of "Site-directed Mutagenesis in Photosynthetic Bacteria."

Danny J. Blubaugh is continuing to work on "Photoinhibition and Photoactivation of the Oxygen-Evolving System" at the University of Kentucky.

Julian Eaton-Rye is the recipient of an Exchange Fellowship awarded by the Royal Society of the U.K. and is working on the "Biochemistry of the

Oxygen-Evolving Complex" at the National Institute for Basic Biology, Okazaki, Japan.

Barbara Zilinskas is now Professor of Biochemistry and Microbiology at Rutgers University.

Thomas J. Wydrzynski is spending the last year of his Humboldt Fellowship at the Max-Vommer Institute's Department of Physical and Biophysical Chemistry at Berlin.

Daniel Wong is at Miles Laboratories in Elkhart, Indiana, and is now married.

Alan J. Stemler, who met his wife in France, is now a father. Alan is in the Botany Department at University of California-Davis.

William Vermaas is now Assistant Professor of Botany and Microbiology at Arizona State University at Tempe.

Prasanna Mohanty is currently the Dean of the School of Life Sciences at Jawaharlal Nehru University, New Delhi.

At the Indo-US Workshop on Bioenergetics and Molecular Biology of Photosynthesis in New Delhi (Jan. 1988) a number of alumni and faculty were participants: Prasanna Mohanty, Gauri Singhal, Saili Bose, William Vermaas, George Papageorgiou, Govindjee, Donald Ort, and John Whitmarsh. Gov said, "The weather was gorgeous and the latter three participants had fun traveling by taxi to Agra and Jaipur!"

John Walton Hall 1918-1987

Professor Emeritus John W. Hall of the University of Minnesota passed away April 3, 1987, after a prolonged illness. John was one of the best friends of American paleobotany and paleobotanists everywhere. John received his doctorate in Botany in 1950 with Oswald Tippo as his advisor. He also served as the first teaching assistant in the new paleobotany course offered by Bill Stewart and found his true research interests there. John served on the faculty at Minnesota in the Department of Botany for 34 years. John's many research contributions from the Carboniferous to the Cretaceous-Tertiary paralleled his great gifts and help to students and colleagues. When he "loaned" you some specimens, he gave

you large research projects and they arrived well crated and insured for a fortune. John is most vividly remembered as the "galloping goat" by his students in field work and his Vermont accent often left the uninitiated student searching for a translation of a few words.

John served as chair of the Botany Department at Minnesota on two occasions, was a NATO Fellow, and received the Distinguished Service Award from the Paleobotanical Section of the Botanical Society of America, "In Recognition of Exceptional Leadership and Devoted Service." He was very special to all the people he touched and helped.

J. B. Hanson Research-Travel Fund

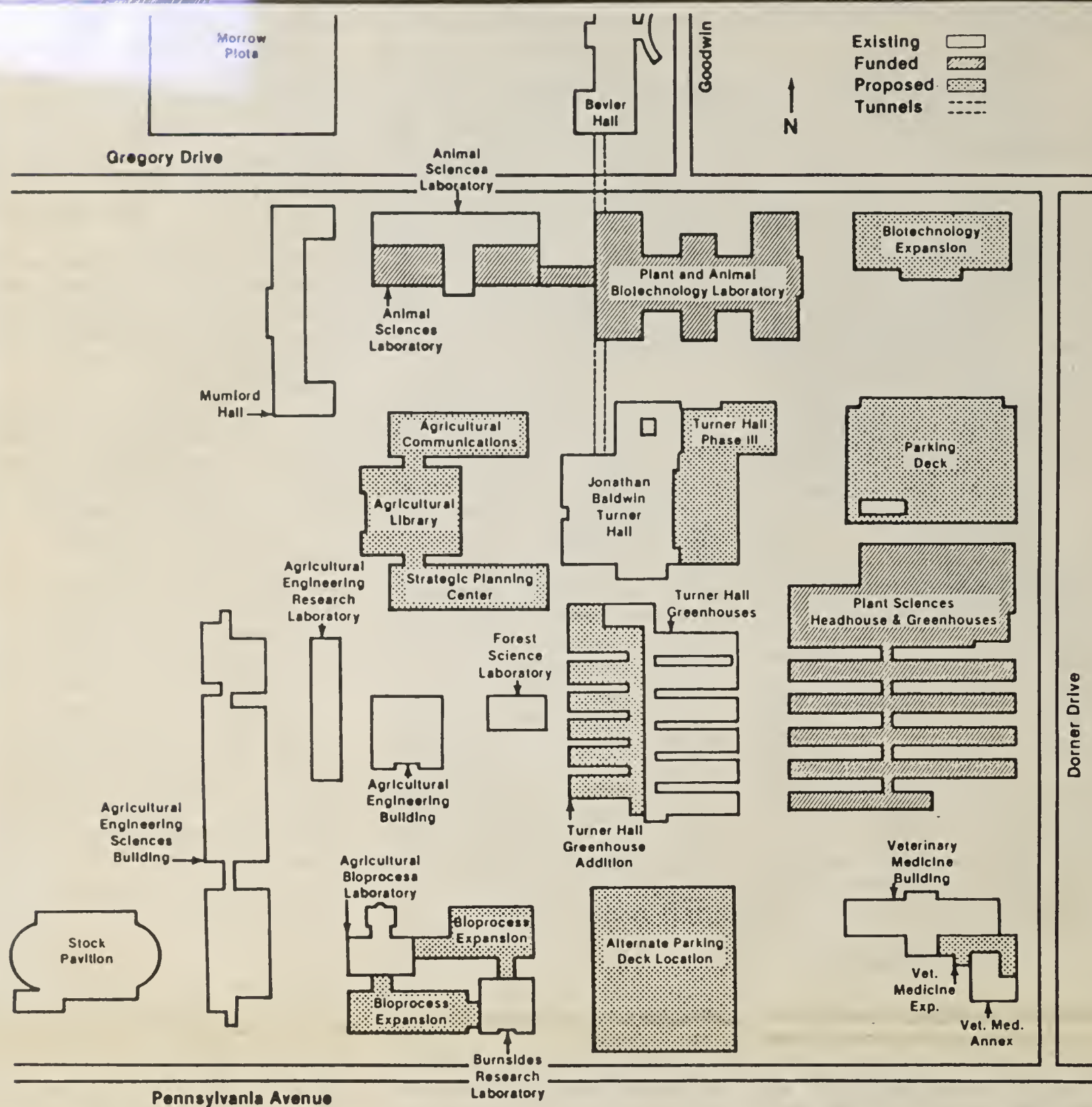
The Hanson Research-Travel Fund was established in October 1985 in honor of Professor J.B. Hanson who is noted for his outstanding teaching and research guidance and help of both undergraduates and graduate students. The funds are intended to meet needs of students which cannot be met by the usual means of grants or other extra departmental sources. During the past several years, the fiscal constraints of the Department have sorely limited the availability of support for specially meritorious needs of some students. The Hanson fund has provided that aid and is depleted.

We welcome your contributions which are received by the University of Illinois Foundation, 224 Illini Union, 1401 West Green Street, Urbana, IL 61801. Special thanks to the thoughtful contributors of this past year, including faculty and staff of the Department.

Special Acknowledgments for This Issue

We wish to thank our entire office staff and Carol Kubitz of the Art Service for doing the near impossible again this year! Sheila Hunt provided typing, much needed encouragement and coordination as well as delivery to press. Carol made press arrangements, did the art work and made the mock-up with the ultimate in patience! Beth Myler ran errands to the photo service and Martha Plummer became our staff photographer. Archival retrieval by Shirley Langenheim helped with dates and names. Typesetting was done by Judi Kutzko at the Desktop Publishing Office. Additional thanks go to writers Carol Augspurger, John Cheeseman, Richard Crang, Evan DeLucia, Jim Kramer, Vincent Ling, Donald Ort, Carol Shaffer, and Ray Zielinski, with editorial improvements by Zane Carothers. Very special thanks to alumni and friends for their contributions!

Long-Range Plans for South Campus (Year 2000+)



More and more these days we hear reference to the "north" or "south" campus. This is often in the context of the construction and operational plans for the Arnold O. and Mabel M. Beckman Institute for Advanced Science and Technology just south of University Avenue at Wright Street. Work is just getting underway nearby on the expansion of the Digital Computer Lab complex next door to Uni High.

On south campus there are projections for what is referred to as the Agricultural block. This is flanked by Gregory Drive on the north, Pennsylvania Avenue on the south and Dorner Drive on the east. An unofficial master plan update shows some of the key features planned that involve Plant Biology and our colleagues in the plant sciences. The new plant sciences greenhouse complex is located within this block, facing onto Dorner Drive.

The Plant and Animal Biotechnology Building will be constructed on Gregory Drive, extending across what is now Goodwin Avenue. The new biotechnology research center will house more than 40 research programs in life sciences, basic agriculture and veterinary medicine. Approximately one-half of the Plant Biology faculty will be housed in the new facility. The research programs represented by these colleagues include biophysical, biochemical and molecular biology. The \$27 million building is to be completed by fall 1990.

Plant Paleocology and Evolution Lab to Host Mid-Continent Paleobotanical Colloquium

In the early 1980s midwestern paleobotanists decided that more informal gatherings were conducive to a good exchange of ideas, techniques and even "off-the-wall" views of the ancient plant and animal world. A splendid precursor group in the northeast had developed such annual gatherings at Harvard Forest in Petersham and they worked extremely well. The Sixth-Mid-Continent meetings are being held this June (3-5) on the Urbana campus and more than 40 participants are expected for the mixture of contributed papers, demonstrations, poster sessions and a workshop on coal ball-based studies. Keynote speakers are Andrew H. Knoll from the Botanical Museum of Harvard University and Karl J. Niklas from Cornell.

Lead speakers for the coal-ball workshop are Philip J. DeMaris, a principal researcher on the origins of coal balls, from the Illinois State Geological Survey located on our campus, and Aureal T. Cross from Michigan State University. Professor Cross is a pioneer in the early American studies of plants from coal balls, including the first monographic work, as well as the most recent recipient of the Gilbert Cady award for outstanding contributions in

the study of coal. "Doc" Cady, for whom the award is named and endowed, was an internationally renowned coal geologist of the Illinois State Geological Survey which has pioneered in many aspects of coal research.

The public is invited to the keynote presentations to be held in the Medical Sciences Building Auditorium: 8:00 p.m. Friday, June 3, A. H. Knoll on "The Emerging Plant World of the late Proterozoic"

8:00 p.m. Saturday, June 4, K. J. Niklas on "Wind, Pollen, and Bernoulli—or, was there physics in the Paleozoic?" THIS IS AN ADVERTISEMENT!!

Illini participating in the colloquium are David Dilcher, Indiana University; William DiMichele, Smithsonian Institution; Richard Leary, Illinois State Museum; Karl Niklas, Cornell University; Russel Peppers, Illinois State Geological Survey; Benton Stidd, Western Illinois University; and Richard Winston, Geological Survey of Alabama. Alicia Lesnikowska and Debra Willard are co-hostesses.

The Chaos Committee (TCC)—Incredible Stories (New Feature)

After many years of observing management at an unnamed public university, the U., it occurred to me that committees of more than four were, by design, destined to create more chaos than wisdom and consensus. Perhaps an ultrahyper-top-secret master group of four could be elected to replace the committee on committees (using their initialed letterhead, a savings). TCC would submit a ballot of fictitious names via an authentic colored sheet for faculty to mark, sign, and return to the desired mail stop. The absence of familiar names would be taken for new blood in the committee ranks (in a large U., who knows most of the nominees?) and, in the absence of curricula vitae, one of each pair of names will receive an electoral majority. All colleges and high profile areas will have candidates and be pleased with the announced results: one from computer science, (an alternate from artificial intelligence), another from engineering (specifically laser physics), one from the business college (accounting, of course), and one from molecular biology (with joint appointments in agriculture, biology and biochemistry). The "elected" Chaos Committee will have no chair, lest the work load be unduly distributed. The TCC receives charges or problems to solve (not aims or objec-

tives) from the Provost. If there is no Provost, one will be appointed who rejects every fourth promotion, course proposal, or recommendation of TCC to assure that screening is taking place. This will also save money and employ an undergraduate stamper. A minority member is designated from accounting to record minutes.

This is, in general, the setting for happily reviewing the bad news of the past and perhaps the worst yet to come. Come along as we listen in to the beginnings of the first session (strictly two hours, coffee, no cream, and plastic cups—no spoons).

A secretary's voice over an intercom welcomes the fatal five (alternate included) to the "Commissioned Committee's" (never call it a Chaos Committee) first meeting. Unfortunately, the provost will not be able to attend—NCAA sanctions meeting or something in Fort Lauderdale—but the agenda and assignments are placed neatly at each "sit down" i.e., a mammoth table befitting peace talks and long distance communication, but with more than computer terminals and fine print instructions; each is a work station!

CS (Computer Science) speaks first. "This appears to be state of the art; I think we are networked. Press a key."

And all do as if by command, the AC (Accounting) pressing the space bar, PH (Physics) hits P and the MB (Molecular Biologist) looks for a red button. Each work station has more wiring dangling beneath the table than a spilled bowl of spaghetti. Up pops the "problems" of the Provost. LADY AND GENTLEMEN, SELECT COMMISSIONERS: YOUR "COMMISSIONS IMPOSSIBLE" FOR THIS ACADEMIC YEAR ARE 1...FIND THE IMAGE AND CHARISMA OF THIS U.; 2...FIND HOW TO RAISE SALARIES ACROSS THE BOARD; 3...; 4. (CONTINUED NEXT INCREDIBLE STORY).

And so, our saga of the Chaos Committee unfolds (or nears collapse) with the two charges assigned.

CS, who will eventually relinquish the chaosophy to each colleague, in turn, mandates, "It is rather simple. We build the image of the U. around the computer expertise of research and development with a glossy outsized brochure of our super computer pioneering and the academic 'star wars' to come—BITNET, FISHNET AND DRAGONET—all networked to SIS, MOM AND DAD. It can't lose. People will simply be overwhelmed with our fiber cables, nodes and high end computation—it is almost like showing them what truth *is*!" CS has to pause as his pulse races almost out of control. "Think of how this fits in with the building program and capital development on North Campus."

The alternate AI (Artificial Intelligence), unexpectedly invited by a computer error, launched forth. "I'm glad you mentioned the North Campus. You realize, of course, that the new IBM Super complex actually builds on those solid state circuits of yours and there is a certain nuance or implied exaggeration on your part that truth can evolve from a nonhuman set of just chips and things! You need neurobiology above all else!"

MB asserted, "Gentlemen, as a scientist and technician, I beg to-plead-to-implore you to reconsider that overlooking the merits of biotechnology (which includes neurobiology) will not only lower your charisma solution but screw you up with all the granting agencies from NIH to DOE—is that not right, CS, AI, PH and who else is in TCC?"

AC was busy taking minutes and missed the affront.

In a struggle to reply, PH pushed forward a litany that DOD and DO-EVERYTHING were adamant about not putting all of their lasers in one basket, especially SDI and that we were totally against the misuse of technology for the disadvantage of mankind, so long as DOD or NSF funded MRL, LMR and LCS and their satellite dishes in the intercollegiate network.

Somehow, his mention of collegiate brought these leaders-to-be from maneuvers to motions—but AC, the peacemaker, gently and soothingly pointed out that the U. was first a business and secondly a research empire and that accounted for the conflict of interests among the research moguls whose empires were greased with federal dollars. In fact, that accounted for the potential decline of the technologi-

cal empires that were to come, much like the Romans had squandered their genius for roads, military maneuvering and conquest of new territory. Indeed, the modern Appian Way was not built just by technology but by inventions, patents and lucrative investments that hedged against the day of promises not fulfilled. Each listener waited for a pause to interject that AC was not only a minority but a minority viewpoint and, as AC descended from investments to liabilities and cash flow, the looming possibilities for each participant of TCC looked better and better. Two hours had passed and the motions, pregnant with impact, went unrecorded on the green tubes, except for AI's suggestion that TCC become a pilot program for research of the IBM Super complex with brain implants—a la "The Brain!" A blinking screen signaled the end of the cold coffee and distant voices.

At the next meeting AC sat alone, a little chilly in the spacious and drafty room. There was coffee only at her work station. As she wrapped her coat over her shoulders, the screen was activated with the following messages: "CS has diversified into full-time consulting following early retirement; PH has gone to the Livermore Labs; AI had a better offer at Stanford; and MB has filed enough patents to make the U. solvent for years to come. Would you like to try problem 2?"

"Well, yes," said AC, "but first I would hazard a guess at problem 1. The U. is mostly a 'crucible' where faculty like TCC rise to importance and move on, leaving behind the 95% who are hard-core academicians and rather non-charismatic researchers seeking answers to their questions and sharing their enthusiasm and expertise with students. It is rather simple. In the middle of the prairie, what else would you do with your time between Christmas and spring break?"

"Why do you call the U. a 'crucible'—isn't that something of clay, graphite, porcelain or infusible metal?"

"Yes, that's what tenure is all about here, isn't it?"

"Perhaps, but what do you imply by its use in the charisma problem?"

"Provost, you select against the transient scholar and end up with some real survivors with dedication!"

"And how do you convey that as an image we can capitalize on in our recruiting and PR?"

"Simple, you show people talking to people, and students with faculty, not with computers. Emphasize how person-to-person links achieve great things and get scholars and departments through the worst of times—look at your own Department of Plant Biology."

A pause. "I don't see any such department listed in Agriculture."

"Try SOLS."

"SOSS was disbanded a few years ago."

"Wrong school! SOLS, like SUN."

"Of Life Sciences? You mean the P.E. department?"

"No, Biology!"

"Yes, I recall, we were going to pump in some money to them, but they weren't listed on the computer as Biol-

ogy so I gave it to Chemistry and Psychology—close?"

"Try Botany, I have street addresses for NHB, Davenport, MH, a Biotech Building that is not built yet, an Annex on Springfield, a North Greenhouse, a Plant Science Greenhouse, and even a Building 337. Well, I guess you could euphemistically say that they are integrated or disintegrated—I wouldn't bother, they are harder to find than SOLS which only has five more addresses."

Pause. "Just send the next money to accounting and we will arrange a drop at the proper place. We have a flat 1% surcharge of the 30% O & M surcharge, the 17% mail surcharge, the 17% supplies surcharge, the 45% overhead on grants and there is no auditing fee because we take pride in our professional contribution to the campus welfare and effectiveness. You might say that only 1% of the 'buck' stops here!"

"That's something to consider, AC. But we have our own 'Accounting Department' that does well by its auditing fees."

"Provost, are there any 'freebies' at this University?"

"AC, you said it, yourself. This is a business and the bottom line is 'users pay'."

"What about the library?"

"We're working on that, perhaps day rental!"

"What does the State pay for?"

"Salaries. Of course, you have to keep in mind that these have to be kept to a minimum because there is no local surcharge on State salaries...except this year, we have a one-time-only surcharge on everything at 2%."

"Why is that?"

"In order to give you all a raise!"

"Oh? Has anyone in your 'Accounting Department' talked to anyone in our 'Accounting Department'?"

"I'll take that under advisement, and I wish to change the subject to why you specified 'Christmas to Spring break' as a *research span* for the faculty and students?"

"Provost, we find in our research on seasonal businesses that the hirings of new personnel largely take place after spring break; this involves a lot of our personnel. Evaluation, promotional proceedings, and recruiting of new personnel occupy much of the fall except for some businesses involved in studying environmental conditions, like pollution, plants, and local new garbage-dump sites. And then, of course, there's always teaching of the 35,000 students."

"I'm glad you mentioned plants, that Clinton Power Plant has been uppermost in my mind. We need to put more money into our own power plants to reduce emissions of that SO...SO, what was that SOS unit again?"

"Biology?"

"Yes, I've thought that we might do a PR piece on how they are saving the world from hunger—they would play well in an agricultural state like ours...garner the public support for a tax increase to help Education."

"Provost, are you aware that biology has many other big business capabilities that are not 'agricultural'?"

"How so? What here beans and corn?"

"The rest of the plant animal world!", AC volunteered. "Incidentally, hear that biology (SOLS) just might be a rising commodity in the academic market—nothing definite. I'm not into statistical forecasting; don't quote me—let's wait a few more years and see what Michigan and Berkeley do."

"Thank you, AC. Your 'Accounting Department' is more philosophical and responsive than mine. I have a contact at Madison. But why does yours cost so much? Mine is self-sufficient!"

"Provost, I can't really answer your question definitively because, as an untenured faculty member who does not have a best selling textbook in accounting, I am not independent enough to tell you what you need to know. That is why I am still here on the faculty. My husband is in industry and he would tell you that a 10% operational fund that is surcharged to oblivion will eventually 'wipe you out', even in the best of times. In the worst of times, it may be necessary for you to get rid of some of those overpaid administrators...that really brings me to problem 2."

"Go on."

"Well, this sounds perhaps too innovative, but have you considered changing the administrative structure of the U.? My husband suggests that management tends to grow at the expense of labor where services, as opposed to products, are provided. If they cannot charge for products, the profit incentive, they surcharge the services. There has to be some means to internally finance the operation or you don't control the outcome of the activity. Since education is tax financed, and taxes do not pay for the support services or research activities, you obtain a 'crucible test'—an ingenious device to attract the best grant getters available who bring in the bulk of the surchargeable dollars and, wallah, you have your own business-surge-galore! My husband suggested it..."

"AC, you are a fountain of ideas! Go on."

"Well..., in doing away with highly paid administrators, it would free up all that unprofitable (non-grant-getting capabilities) investment of salary in administration, and its xerox machines that spew busy-work forms down on all the "grant getters"—this would eliminate the need for department heads and free up that \$1,500 to pass along to the faculty. After all, if TCC does not need a chair, neither do the departments. Supplement that with the patent money from molecular biology."

"AC, I will take that under advisement, click, under advisement, under advisement...", and the green gradually faded from the screen and scene elsewhere.

(Next issue, M & O and other monopoly games played at the U., such as Park Place which costs \$300 for parking a university vehicle at the U. How's that for a surcharge! It is all in fun at the big U.)

-END-

BOTANY NEWSLETTER

Department of Plant Biology



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